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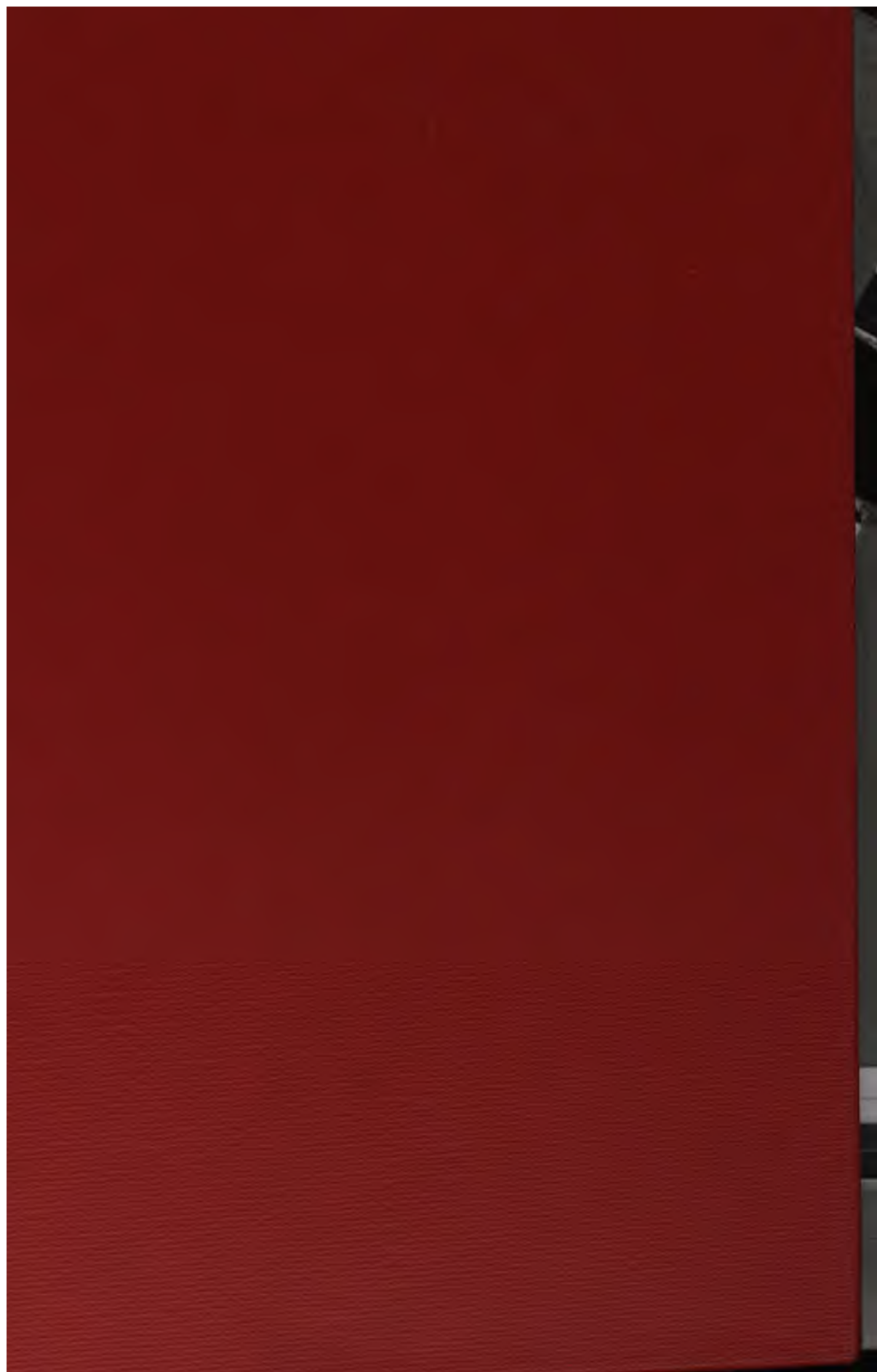
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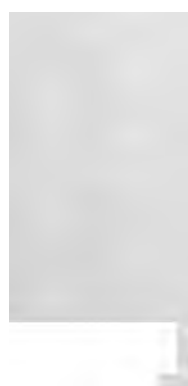












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THE NORTH CAROLINA GEOLOGICAL SURVEY

J. A. HOLMES, STATE GEOLOGIST

BULLETIN No. 19



THE TIN DEPOSITS

OF

THE CAROLINAS

BY

JOSEPH HYDE PRATT, PH. D., MINERALOGIST

AND

DOUGLASS B. STERRETT



RALEIGH

E. M. UZZELL & Co., PUBLIC PRINTERS AND BINDERS

1904



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## LETTER OF TRANSMITTAL.

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RALEIGH, N. C., May 1, 1904.

*To His Excellency, HON. C. B. AYCOCK,*

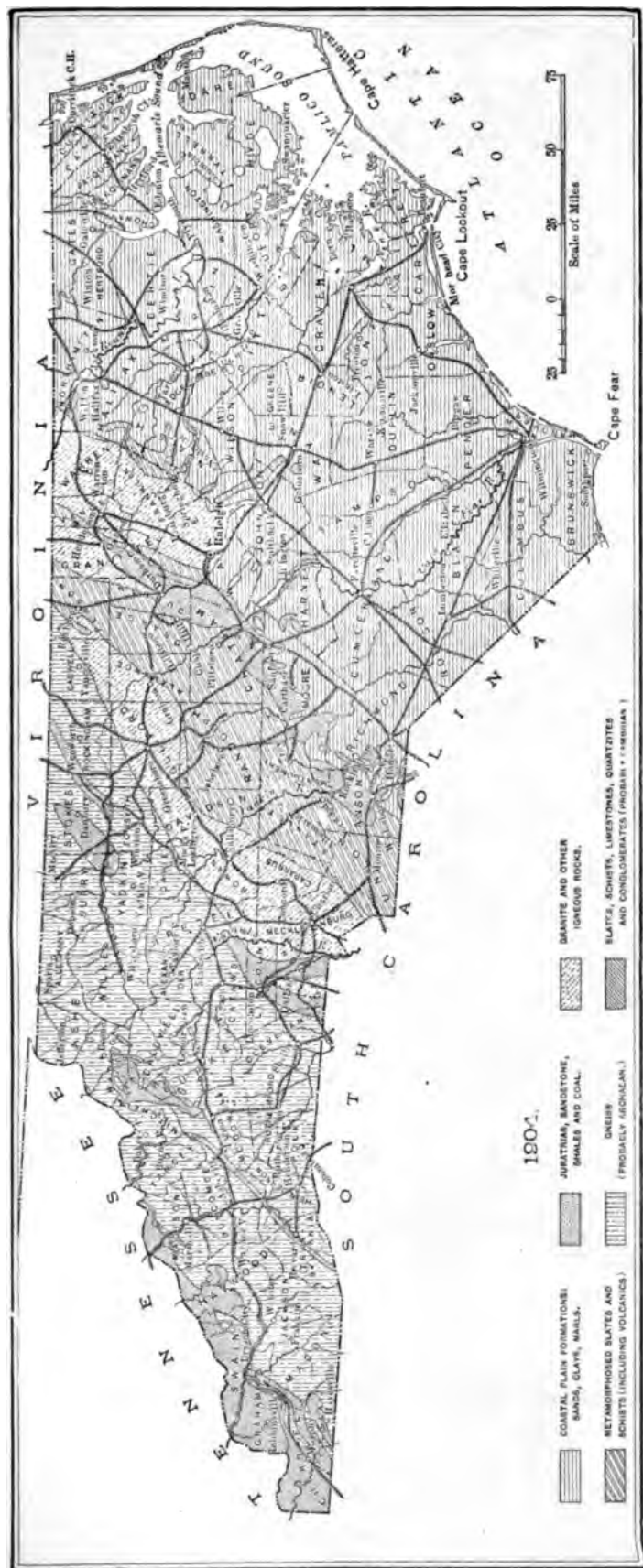
*Governor of North Carolina.*

SIR:—The interest that has recently been aroused in the occurrence of tin ore in the Carolinas has led to an examination of the deposits and the preparation of the present report on the Tin Deposits of the Carolinas, which I have the honor to submit for publication as Bulletin No. 19. In this report an attempt has been made to answer as fully as possible the various questions that have been raised regarding the extent and occurrence of the tin ore in the Carolinas, the economic value of the deposits, and the world's source of supply of tin.

Yours obediently,

J. A. HOLMES,

*State Geologist.*



MAP OF NORTH CAROLINA SHOWING THE DISTRIBUTION OF THE PRINCIPAL GEOLOGICAL FORMATIONS.



# THE TIN DEPOSITS OF THE CAROLINAS.

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BY

JOSEPH HYDE PRATT

AND

DOUGLASS B. STERRETT.

---

## INTRODUCTION.

When one considers the amount of tin that is consumed each year and investigates the sources of supply of this metal, he begins to realize that it is an important question that has been raised as to where the world's supply of tin is to be obtained. During the past few years the yearly production has not been equal to the demand, and the accumulated stocks of tin that have been held in various countries have become very much diminished since 1896. Thus, while the demand for tin is increasing, due chiefly to the large growth of the canning industry and the use of tin boxes and cases in shipping sundry articles, the production has not kept pace with this demand. Approximately 43 per cent. of all the tin produced in the world is consumed in the United States, and until the past year there has been practically no production of this metal in this country. With the exception of the discovery of tin in Alaska, the ore deposits recently located in North and South Carolina are the only ones that have been discovered during recent years that have offered any chance of becoming commercial producers of this metal.

On account of the value of the metal, tin, it is possible to work very low grade ores, if they are in quantity. Usually there is but little difficulty in cleaning and concentrating a tin ore so as to obtain a nearly pure product. The tin mineral that constitutes the ore is cassiterite, a tin oxide represented by the formula,  $\text{Sn O}_2$ , and is a heavy mineral, having a specific gravity of about 6.5 to 7.

Considering the existing conditions in the tin industry, any discovery of tin like that of the Carolinas is of importance and demands



attention; and it would mean much to this country if commercial tin deposits could be opened up, so that we would not be entirely dependent upon foreign countries for our supply of this metal.

The discovery of tin ore in North Carolina near Kings Mountain was made in 1883, and, according to Mr. John Furman,\* a mining man from Georgia, loose pieces of cassiterite were found lying upon the surface by a young man named Claywell, who was attending a school taught by Captain W. T. R. Bell. He was attracted to the mineral by its peculiar appearance and unusual weight; but was unable to determine its exact mineral character. Later these specimens were on exhibition at Boston, and Dr. Charles W. Dabney, who was present, noticed them, and upon testing same they proved to be the mineral cassiterite. Although some prospecting was done in the vicinity of Kings Mountain for tin ore, it was not until 1886 that any systematic prospecting was carried on. Early in that year Mr. John H. Furman spent a number of days examining the tin belt and found a number of samples of the tin ore, which were assayed at Ledoux & Co.'s laboratory in New York, and this firm later in the year retained Mr. Furman to make a thorough, systematic search of this region. In 1888 a 10-stamp mill was erected by Mr. Ledoux and his associates in which to thoroughly test the tin ore which was being developed; but, owing to litigation, work on the property ceased in the latter part of 1889. About the year 1892 work was begun on the Chestnut Hill property, but continued for only a portion of the year. Since then little or no work was done on the tin belt until 1903, when the Ross mine at Gaffney, South Carolina, was discovered. This has led to renewed interest in the Carolina tin belt, and considerable prospecting and development work is now being done at a number of places along the belt.

#### GEOGRAPHICAL LOCATION.

What may be called the Carolina tin belt extends from Gaffney, Cherokee County, South Carolina, in a general northeasterly direction across this county; the southeastern corner of Cleveland County, North Carolina, and across Gaston and Lincoln counties, North Carolina. The tin deposits found in Rockbridge County, Virginia, may be a continuation of the Carolina tin belt across Catawba, Iredell,

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\*Trans. N. Y. Acad. Sci., Vol. VIII, 1888-1889, p. 142.



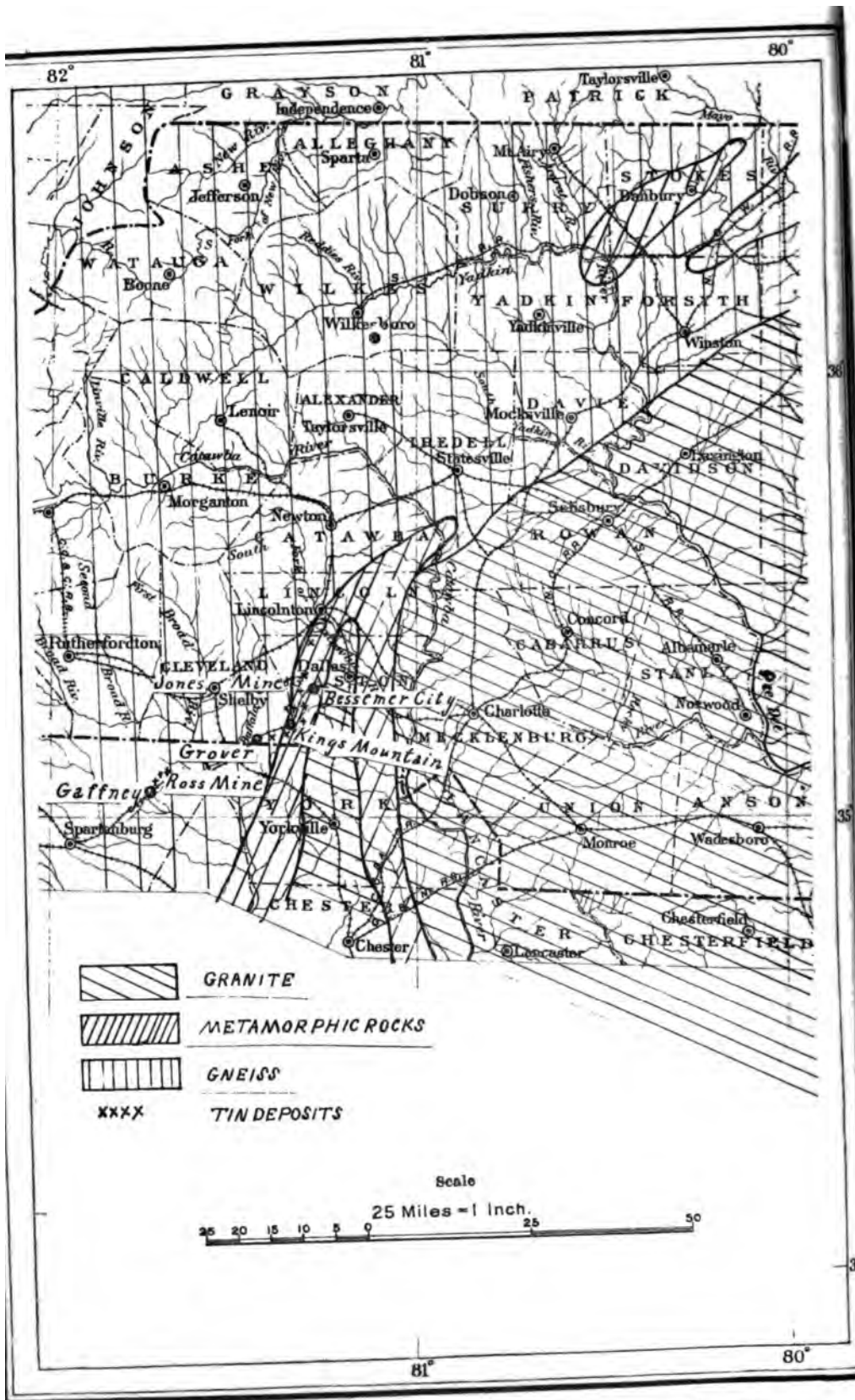


FIG. 1.—GEOLOGICAL SKETCH MAP SHOWING THE LOCATION OF THE CAROLINA TIN DEPOSITS.

Yadkin and Surry Counties, North Carolina. The general direction of the rocks carrying the tin ore is the same as those in Virginia, and the continuation of this direction from the Carolina deposits would approximately cross those places in Rockbridge County, Virginia, where tin ore has been found. The same rocks that are outcropping in Surry County, North Carolina, are also in this same line and have the same general direction. The principal locality in South Carolina where tin ore has been found is about one mile north of Gaffney on land belonging to Captain S. S. Ross. For a distance of 13 miles from a point about a mile northeast of the Ross mine no tin minerals have as yet been found. The next place in the belt where tin is known to occur is a short distance northeast of Grover, North Carolina, a station on the Southern Railroad. From this point tin ore has been found almost continuously for over 14 miles to within a few miles of Lincolnton, Lincoln County, North Carolina, and it is reported to have been found a few miles northeast of Lincolnton, but no authenticated record of this discovery could be obtained. No tin has thus far been found in North Carolina northeast of the Lincolnton locality, nor in Virginia until the Rockbridge County deposits are reached.

A general idea of the location of the Carolina tin deposits is given in the map, Figure 1. The principal deposits that have thus far been located are the Ross mine at Gaffney, South Carolina; the deposits in the vicinity of the town of Kings Mountain, North Carolina; on the southern end of Chestnut Ridge, about  $2\frac{1}{2}$  miles northeast of Kings Mountain; and on the John E. Jones plantation, 7 miles northeast of Kings Mountain.

The Southern Railroad passes over a considerable portion of the tin belt, following almost the general direction of the formation from Kings Mountain to Gaffney. At the former place the railroad turns sharply to the east, crossing the tin belt, which continues toward the northeast. Thus, any commercial deposits that may be developed will have good railroad facilities, not being more than a few miles from the railroad. Those on Chestnut Ridge are not over two miles from the railroad, and the ore mined could easily be hauled to the railroad at small expense. If the Jones deposit proves to contain tin in any large quantity, it would still be profitable to haul the ore to the railroad at

Bessemer City, a distance of about 4 miles, if it did not prove feasible to build the railroad to the deposits.

#### GEOLOGY.

The section of North Carolina and South Carolina in which the tin belt occurs is close to the border of the large area of Archean gneisses which extend over a large portion of the western part of North Carolina and the northwestern portion of South Carolina. Bordering these gneisses on the east, there is a series of granites and other igneous rocks extending from Cherokee County, South Carolina, across Mecklenburg, Cabarrus, Rowan, Davidson, Guilford, Caswell and Person Counties, North Carolina, which have a general north to northeast direction. At the extreme southern portion of North Carolina, and extending into South Carolina, there is between these granites and gneisses a band of metamorphic rocks consisting of slates, schists, limestones, quartzites and conglomerates whose age is unknown. These occur quite extensively developed in Cherokee County, South Carolina, and in Gaston, Lincoln and Catawba Counties, North Carolina, and extend for a very short distance into Iredell County, North Carolina. No more of these rocks are observed in this northeast direction until they again outcrop in the northeastern portion of Yadkin County, extending nearly across Stokes County and almost to the Virginia line. They are in every way identical with those found further south and represent the same geological formation. Penetrating up into these rocks in Gaston and Lincoln Counties, North Carolina, there is a mass of granite which is from five to ten miles wide. The schists vary considerably in character, sometimes being very siliceous and having a gneissoid structure. The general strike of these metamorphic rocks is northeast; and it is in this belt of rocks in North Carolina that the tin ore is found. The general strike of the pegmatitic dikes and veins carrying the tin is approximately the same as that of the metamorphic rocks, N. 25° E., but near the South Carolina line there is a rather sharp bend to the westward, so that from there to Gaffney, South Carolina, the direction of the tin belt is about N. 55° E., and it leaves the schists to the east and passes through the Archean gneisses. The rocks in the vicinity of Gaffney, South Carolina, are almost entirely gneisses, similar to those found in North Carolina to the west of the metamorphic rocks and which have been

referred to as the Archean. There are, then, rocks of two distinct geological periods in which the tin veins have been found: (1) Those associated with the Archean gneisses, which are found in the vicinity of Gaffney, South Carolina; and (2) those associated with the schists, which are of a later period, and with which most of the North Carolina tin is found. The ore at the Jones mine, 7 miles northeast of Kings Mountain, is in greisen veins that occur in a gneissic rock, which may be a portion of the Archean gneisses to the west.

As has been stated above, the main country rocks are for the most part crystalline schists and gneisses, the former being micaceous, chloritic and argillaceous, and the latter micaceous and hornblendic. The strike of the schistosity of these rocks is usually in a general northeast direction and they dip for the most part at very steep angles to the westward. The veins in the gneisses are dipping toward the east at very steep angles.

The Kings Mountain region of North Carolina is geologically situated in a band of metamorphic rocks composed of slates, schists, limestones, quartzites and conglomerates whose age up to the present time has not been definitely determined. The width of this belt near Kings Mountain is about 10 miles and extends in a direction about N. 10° to 20° E. Just east of Lincolnton, Lincoln County, it joins another band of similar rock, the two being separated east of Kings Mountain by a mass of granite. To the west of these metamorphic rocks are the Archean gneisses, with which the tin veins of Gaffney, South Carolina, are associated. The strata of these metamorphic rocks are tilted at very high angles to nearly vertical, and in the resultant alteration and erosion to which they have been subjected, the quartzites have resisted these influences the most, so that they now form the top of the peaks and ridges such as Kings, Crowders and Anderson mountains, which rise 500 to 1,000 feet above the average elevation. It is undoubtedly the mass of granite which is to the east that has tilted these metamorphic rocks and thrown them into their present position.

There are a number of amphibolite dikes that have been observed cutting these metamorphic rocks, but they have made very little change in the position of the schists through which they penetrated beyond a metamorphic action. These sedimentary rocks were tilted

into their present position before the intrusion of these dikes, which are following partly the lamination of the schists and their general trend; but in a few instances are cutting across the schist. In two or three instances where these dikes are cutting across the schists, there are approximately parallel to them veins of tin ore. Pegmatitic dikes are also common throughout this belt of metamorphic rocks in North Carolina and in the gneisses further to the west in South Carolina. They could be followed almost continuously from three miles above Grover, North Carolina, to the Jones mine, 7 miles northeast of Kings Mountain. In one place, a short distance below Kings Mountain, North Carolina, the pegmatitic dike was all of 200 feet wide. They follow in many cases the planes of lamination of the schist which represent lines of least resistance. Where the pegmatitic dikes are cutting across the schists, they may be following old fractures that were produced at the time of the intrusion of the amphibolite dikes.

About one-half mile below Kings Mountain the pegmatitic rocks begin to outcrop very boldly and continue in this way nearly to Grover, North Carolina, a distance of 7 miles. This mass of pegmatite varies a good deal in width in this distance, from twenty-five to six hundred feet. Just in the northern edge of the town of Kings Mountain there is another strong outcrop of the pegmatite, but from this point there is but little seen of the pegmatite northeast until Ramseur's mill is reached. Here the pegmatite has a width of about 200 feet.

A cross-section of the tin belt in the vicinity of Kings Mountain would show the following sequence: hornblende-gneiss on the western boundary, followed on the east by schists which are in many places very badly decomposed; then a narrow bed of limestone which is more or less siliceous; then quartzite; another bed of limestone; quartzite; schist; to the granite on the extreme eastern portion of the belt, having a total width of about 10 miles.

The term greisen is given to a granitoid rock composed essentially of quartz and muscovite or some related mica rich in fluorine, and it is associated with this type of rock that the cassiterite, when occurring as an ore of tin, is nearly always found.

The tin ore of the Carolina belt occurs in greisen veins that are for the most part in the main mass of mica schist adjoining the gneiss



on the west, and which extends in almost a continuous belt from the South Carolina line to a few miles northeast of Lincolnton, North Carolina. The width of this schist formation is approximately one mile and is bordered on the east by the limestone. At the Jones mine, 7 miles northeast of Kings Mountain, the rocks are gneissic in structure. In South Carolina, where the belt has made a bend toward the west, the tin ore occurs in the greisen veins that are in gneiss.

Where the tin occurs in the large pegmatitic dikes, it seems to be in greisen veins on the boundaries of these where the fumarole action would be the greatest, and probably within the larger masses of pegmatite, where greisen veins may have formed in shrinkage cracks, developed during the cooling of the magma. It has been observed, however, for the most part, in lens-shaped masses of greisen, such as are commonly found in laminated metamorphic rocks, especially schists, when pegmatitic dikes are intruded into them and which are often called "augen." In these lenses in the schist that carry tin there was usually no feldspar present, but similar lenses were observed in the schist that did contain considerable feldspar. These, however, contained little or no tin.

In the vicinity of Gaffney, South Carolina, the greisen veins carrying tin, which are in gneiss, all contained more or less feldspar which was nearly or completely altered to kaolin.

#### **MINERALOGICAL AND CHEMICAL CHARACTER OF THE ORE.**

Cassiterite, the tin-bearing mineral of the veins, is an oxide of this metal whose formula is  $\text{Sn O}_2$  and contains theoretically 78.6 per cent. of metallic tin. When chemically pure this mineral is nearly white in color, but it usually contains more or less ferric oxide, and its color varies from reddish to brown or black, varying with the percentage of iron. Arsenic is also occasionally found in this mineral, and an arsenical cassiterite is usually yellowish in color.

The mineral is tetragonal in its crystallization, and while in certain localities it is sometimes crystallized, it more often is granular and in rough masses, especially where it is found in commercial quantity. The crystals are usually prismatic and are often twinned both as contact and penetration twins. It is a brittle mineral, having an imperfect cleavage, and breaking usually with a subconchoidal fracture.

Its hardness is from 6 to 7 and its specific gravity varies from 6.16 to 7.1, according to the amount of impurity in the mineral. When the percentage of iron is low the crystals are nearly transparent, but become nearly opaque with the increasing percentage of iron oxide. Its lustre is adamantine but the crystals are usually splendant.

There are three varieties of cassiterite that are recognized as follows:

1. Ordinary or tin-stone, which is the crystalline and massive variety obtained directly from the vein or from the broken-down material just below the vein.

2. Wood-tin, which is in botryoidal and reniform shapes with a concentric structure which internally is fibrous but very compact. Its color is brownish, but of mixed shades, giving it the appearance and color of dried wood.

3. Stream-tin is the mineral in the form of sand, as it is found concentrated along the beds of streams and in the gravels below the veins.

None of the wood-tin has been found in the Carolina belt, but the ordinary or tin-stone and stream-tin occur abundantly. Crystallized cassiterite, while not common, has been found, the better crystals having been obtained thus far from the Jones mine, in North Carolina. The only face that has been observed on any of these crystals is the pyramidal face,  $s$  (111). The crystals occur both simple, and twinned with  $e$  (101), as the twinning plane, and are represented by Figs. 2 and 3. The crystals are small, from a quarter to half an inch

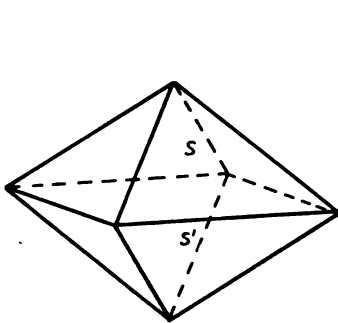


FIG. 2.—CRYSTAL OF CASSITERITE.

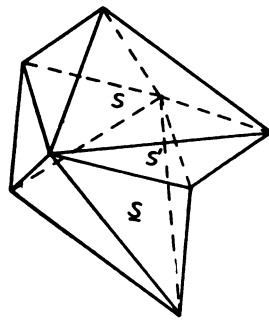


FIG. 3.—TWINNED CRYSTAL OF CASSITERITE.

in length, and are usually of a black color. They are fairly well developed, with most of the edges sharp and distinct. Some, however,

are considerably elongated, as represented in Fig. 4. All the faces are more or less corroded and striated. Rough, partially crystallized cassiterite is found at many places throughout the belt, and from the Faïres property, just south of Kings Mountain, one rough crystallized fragment was found which weighed nearly one-half pound. Small but well-developed pyramidal crystals have been found in the sands

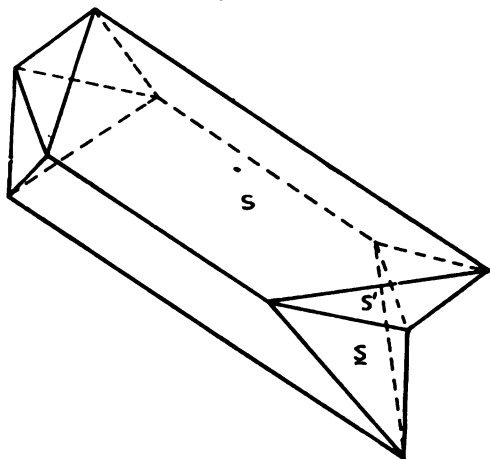


FIG 4.—ELONGATED TWINNED CRYSTAL OF CASSITERITE.

taken from alongside of the road on the M. V. Hovis land. Some of the crystals are simply pyramids and extremely regular in their development, while others are elongated and twinned. The color of the cassiterite found in the Carolina belt varies from black to almost colorless, the common color being a dark brownish-black, and more rarely a light grayish.

Partial analyses have been made of two varieties of the cassiterite found in and about the town of Kings Mountain, North Carolina, one a light grayish and the other a dark brown. The results of these analyses by Professor C. W. Dabney\* are given in the table below:

PARTIAL ANALYSIS OF CASSITERITE.

	LIGHT GRAYISH.	DARK BROWN.
Stannic oxide.....	94.70	82.99
Tungstic oxide.....	.92	1.14
Sulphur.....	Trace	0.46
Arsenic.....	Trace	Trace

\*Bull. 74, U. S. Geol. Survey, p. 35.

As is seen from the above, the percentage of stannic oxide in the light grayish variety is much higher than that in the dark brown, and this is due probably to the larger per cent. of iron that was in the latter sample. These percentages of stannic oxide would correspond to 74.41 per cent. of metallic tin in the light gray sample and 65.21 per cent. in the dark brown. A sample of the pure cassiterite from the Jones mine has been analyzed and gave 89.95 per cent. of stannic oxide which corresponds to 70.70 per cent. of metallic tin.

There is a noticeable difference in the occurrence of the cassiterite in the veins of the southern portion of the belt from those towards the north. At the Ross mine, near Gaffney, South Carolina, the cassiterite is associated with more or less feldspar, which has been partially kaolinized and in some cases completely altered to kaolin, with muscovite mica and but little quartz; and so at the present stage of the development work but little solid ore is obtained, the cassiterite being readily separated from the vein material or gangue minerals without the need of any crushing. As the belt is followed north, however, quartz becomes more abundant and the veins are composed principally of quartz with mica and cassiterite, thus making a firm, compact ore. This latter occurrence would make a true, typical greisen. In this section of the belt it is common to find scattered over the surface boulders from a few pounds to one hundred and fifty or more pounds in weight composed of quartz, mica and cassiterite. The tin, as a rule, is imbedded more in the mica than in the quartz, and the mica in the greisen veins containing tin has a pale, apple-green color, and is fluoritic. There is a small amount of partially altered feldspar occasionally found associated with these veins in the schist. This variation in the occurrence of the tin is due to the country rocks in which the veins occur, those to the north being for the most part in the mica and quartz schists, while those at the Ross mine are cutting a hornblende-gneiss. This variation is discussed further under Origin of the Tin Ore.

#### **ASSOCIATED MINERALS OF THE CASSITERITE.**

A small amount of jet-black tourmaline in rough prismatic crystals and minute needles has been found directly associated with tin, both in the quartz and in the feldspar veins; but it is rare to thus find it in the veins with the tin. It is, however, very commonly found

just to one side of the vein in the schist or gneiss and in some instances represents a tourmalinization of the wall rock. A little magnetite is also occasionally found. Thus far no fluorite or any of the tungsten minerals have been identified in these veins, although a fraction of a per cent. of tungstic oxide was obtained in the analysis of the cassiterite.

Pyrite, an iron sulphide, is found to some extent in the schists, but thus far it has been observed only very sparingly directly associated with the tin in the greisen veins. Chalcopyrite, a copper iron sulphide, has been reported by Mr. John H. Furham,\* as occurring in some of the deeper workings made for the tin; and Dr. A. R. Ledoux† reports arsenopyrite (mispickel) as an associate of the tin.

In the concentrates of cassiterite obtained from the washing of the soil and gravel at various places along this belt, there is more variety in the associated minerals found with the tin. The associated minerals of the stream-tin are magnetite, ilmenite (or menaccanite), garnet, monazite, tourmaline, quartz, a little pyrite, and very sparingly chalcopyrite. Of the above the monazite and garnet are confined principally to the concentrates obtained from the breaking down of the tin veins occurring in gneiss. The monazite was observed in considerable quantity in the fine concentrates from the stream-tin obtained from the gravels in the vicinity of the Ross mine. It is in these same gneisses, in Cleveland, Burke, Lincoln, Rutherford and McDowell Counties, North Carolina, that the monazite which is mined commercially, originated. Occasionally there is a considerable percentage of monazite found in the concentrates with the tin, and one lot of concentrates obtained from the Ross mine that was tested contained 55 per cent. of cassiterite and 20 per cent. of monazite besides considerable garnet.

Regarding the ilmenite, which is found so abundantly associated with the tin in the gravels, it is to be noted that little or none of this mineral has been observed associated with the tin in the veins. There are, however, pegmatitic veins which carry a considerable amount of ilmenite, but such veins carry little or no cassiterite.

There are a number of the associated minerals of the cassiterite, as tourmaline, ilmenite (or menaccanite) and magnetite that are being

\*Trans. N. Y. Acad. Sci., Vol. VIII, 1888-1889, p. 144.

†Eng. and Min. Jour., Vol. XLVIII, 1889, p. 521.

mistaken for the tin mineral. Tourmaline can generally be distinguished readily from the tin by its low specific gravity of 2.98 to 3.20, while that of the tin is about 7. It is not so easy to recognize the tourmaline by this property when it occurs in the quartz gangue, but it can often be at once identified by its triangular cross-section. The magnetite and ilmenite are much closer in specific gravity to the cassiterite, the former having a specific gravity of 5.16 and the latter of 4.5 to 5. The magnetite can readily be determined by its magnetic properties, but the fragments of ilmenite often closely imitate cassiterite and it is occasionally necessary to test the mineral to definitely determine which it is. If, however, it can be compared directly with known pieces of cassiterite, there will be little difficulty in distinguishing the lighter weight of the ilmenite.

The cassiterite can readily be determined by means of the blow-pipe test, by taking a very small amount of the very finely powdered mineral, mixing it thoroughly with six or eight times its volume of sodium carbonate, and a small amount of powdered charcoal, and then fusing this mixture on charcoal before the blow-pipe, when it is readily reduced, giving a button of metallic tin.

The position of the cassiterite in the vein varies considerably. In some instances, as in a 2½-foot dike at the Jones mine, the tin is rather evenly distributed throughout that portion of the vein in which it occurs; while in others, as at the Ross mine, the tin is concentrated in seams which are for the most part close to the hanging wall, which is toward the east. It is also to be noted that most of the tourmalinization that was observed was to the east of the tin-bearing veins. There is also a great variation in the percentage of the tin mineral in the vein, there being some portions that are absolutely barren, while other portions carry a high percentage of cassiterite, and still others were containing only a moderate amount. This makes it very hard to determine the actual percentage of tin in the vein without making a large mill test.

Many of these lenses of greisen, as they were followed downward, pinched out or narrowed to a thin seam, but usually before one gave out another was encountered.

**PERCENTAGE OF CASSITERITE IN THE VEINS.**

In order to obtain some idea of the percentage of cassiterite that the veins contained, a sample was taken from the  $2\frac{1}{2}$ -foot vein at the Jones mine, and this gave on crushing and panning a concentrate of practically pure cassiterite which represented 5 to 6 per cent. of the vein. This would be equal to about  $3\frac{1}{2}$  per cent. metallic tin. Such an ore carrying this percentage of tin would, if in quantity, make a very profitable proposition. Favorably located deposits have been worked that did not carry over one per cent. of this metal.

While the above results may be accurate for the particular part of the vein from which the sample is taken, it does not really represent the average of the tin ore at the Jones mine, and this can probably be determined only by a mill test of a quantity of the ore. It will be found that even those that are very familiar with sampling would be unable to select from a pile of ore two samples which would agree with each other in respect to the amount of tin that they contain, and this is also true in sampling veins where only small quantities are taken. Dr. Ledoux, in connection with his work on the tin deposits in 1888, shipped to England two car-loads of ore from the Kings Mountain locality which were selected by a Cornishman, who endeavored as nearly as possible to obtain an average of hand-dressed ore. The returns received from these car-load lots of ore showed one to contain 2.5 per cent. and the other 1.5 per cent. of metallic tin. From his tests on the vein ore, he was of the opinion that large quantities of hand-assorted ore averaging one per cent. of metallic tin could be obtained and relied upon. The gravels in this same vicinity were also extensively tested, and, as stated by Dr. Ledoux, they operated on the bottoms and on the hill-sides along the creek and in the branches flowing into the creek. The richest deposits were found on these branches, but their superficial area was small. The results of this test showed these gravels to contain from 1.5 to 2.1 pounds of metallic tin per cubic yard. These concentrates, however, were largely contaminated with garnets and iron minerals, so that sand, washed clean, as much as possible without using a magnetic separator, varied considerably in the amount of metallic tin which they contained, their tin contents varying from 11.22 per cent. to 64 per cent. The gravels in this vicinity are not nearly as rich as those



near Gaffney, South Carolina, where the tin in the alluvial deposits is the result of breaking down of feldspathic veins in which the feldspar has been entirely decomposed and has readily freed the tin ore; while in the more northern portions of the belt, where the tin is more closely associated with the quartz and mica, in the breaking down of the veins it has been left more as boulders and fragments rather than as loose pieces of cassiterite in the soils and gravels.

The alluvial deposits of the Ross Mine, Gaffney, South Carolina, have been estimated, from the various tests that have been made, to average in the neighborhood of 25 pounds per cubic yard.

It is to be noted, however, that with the exception of the Cornish tin mines, nearly all the world's production of tin is obtained from alluvial deposits and not from vein formations. The foreign gravel deposits are usually much more extensive than those in the Carolinas and are more remote from the original veins. These are described on pages 36 to 40.

#### DEVELOPMENT WORK.

*Ross Mine.*—The principal development work that has been done on the tin belt is at the Ross mine, one mile nearly east of Gaffney, South Carolina. The tin ore was first observed in 1902 as small broken crystals in the soil, which were exposed by the uprooting of a large tree. As soon as the specimens were identified as cassiterite, the soil was tested by panning and found to contain a considerable quantity of this mineral. It was found on the slope of a hill which rises about 60 feet above the level of the stream, and all over this slope of the hill the tin was found in the soil and gravels. Near the top of the hill a shaft and an open pit were sunk, which cut into the saprolitic rock, in which were found saprolitic-pegmatitic dikes, carrying more or less tin ore. This pit was about 20 feet below the surface, 20 feet long, with a number of drifts running from it following on different seams containing tin. The shaft extended 9 feet below the bottom of the pit. Wherever the tin was found in place it was associated for the most part with feldspar, which was largely kaolinized, thus permitting the concentration of all the tin ore by hydraulic processes to a depth of at least 30 feet and probably considerably deeper.

The tin occurs in streaks, or seams, in the saprolitic pegmatite, which is dipping about  $50^{\circ}$  toward the east and close to the hanging

wall. The tin was found to continue to the lowest depth worked. In these workings there were a number of narrow pegmatitic dikes or lenses, all of which carried tin.

As these pegmatitic dikes were followed toward the southwest by the drifts they were found to be cut off in a distance of about 20 to 30 feet by a slickenside face which undoubtedly represents a line of faulting. The extent of the displacement was not determined.

Just above this shaft and pit and about 400 feet from the stream, a shaft 40 feet in depth was sunk and trenches were cut across the supposed strike of the veins, but there was only a small amount of tin obtained, although one fragment was found weighing about 3 pounds that was nearly pure cassiterite. None of the pegmatitic dikes were encountered in this work. This result was to be expected and is due to the faulting.

Numerous pits and trenches have been made from here to the stream and all showed the presence of tin ore, some carrying only about 12 pounds to the cubic yard, and some carrying as high as 75 pounds. The average for all this soil and gravel will be about 25 pounds per cubic yard.

At the stream a trench was run back into the hill for about 40 feet, following on bed rock. About the bed rock there was a stratum of gravel 1 to 3 feet in thickness overlain with soil which was 2 feet thick at the lower end of the trench and 6 to 8 feet at the upper end. Both the gravel and soil carried a good quantity of tin ore.

The area over which the cassiterite has been found in the soil and gravels is about 1,000 by 600 feet, and all of this material will undoubtedly pay to wash for this mineral. This alluvium varies in depth from a few feet to 8 or 10 feet, and it should all be treated hydraulically. There is a sufficient water supply close by for this purpose.

In tracing the float-tin from the Ross mine it was found almost continuously for half a mile southwest and for one and one-half miles in a direction about N. 55° E.; but no deposit of any importance has thus far been located. From this point no more tin has been found until a point was reached about 3 miles above Grover, North Carolina, a total distance of about 13 miles, in which there is no authentic record of any tin ore having been found. Pegmatitic dikes

have, however, been observed quite extensively developed in this intervening area and they are especially prominent just above Grover, North Carolina. It is probable that more systematic prospecting will reveal deposits of cassiterite in this portion of the belt. From this point tin ore has been found almost continuously to a mile or so above Lincolnton, a total distance of about 28 miles, although the principal deposits are at a distance of 7 miles northeast and southwest of Kings Mountain. It is near Grover, North Carolina, that the general direction of the belt changes from N. 25° E. to N. 55° E.

The next point at which any work has been done for tin is about 3½ to 4 miles southeast of Kings Mountain, where a cut has been made about 6 feet deep on the edge of a mass of pegmatite. These rocks carried cassiterite in small particles, and could be traced by means of surface pieces for a distance of about 100 yards. At another point, about one-half mile to the north, good ore was found as float just below a large mass of amphibolite rock. A trench had been dug below this amphibolite, which penetrated through mica schist and encountered a tin-bearing greisen.

In prospecting for tin in North Carolina where the pegmatitic dikes are not decomposed to any considerable extent, it has been the custom to sink a shaft in the schist just to one side of the pegmatite and then cross-cut the pegmatite from the bottom of the shaft. In many instances the schist is more or less decomposed and is very readily worked without any blasting.

*Ledoux Property.*—Two and a half miles northeast from this point is the Ledoux\* tin property, which was worked quite extensively some years ago. A number of prospect trenches and shafts showing the existence of tin ore were made on the contact of the pegmatite and schist and others entirely within the pegmatite. There were three cross-cut trenches made which pass through the pegmatite to schist on the east and two other trenches that followed along the contact. From one of these latter a shaft was sunk, which is now partially filled up. The strike of these masses of pegmatite was N. 25° E., and then followed to a certain extent the lamination of the schists. Their dip, however, was nearly vertical. Just west of the old mill-site a shaft was sunk which opened up a body of good ore. In digging

\*Eng. and Min. Jour., Vol. 48, 1889, p. 521.

ion for the mill it was reported that good ore was un-  
short distance to the south of the mill there has also been  
prospecting done by means of trenches and shafts, which  
ly made where float-tin was found in boulders. In the  
ne of these shafts chalcopyrite is reported to have been  
after working through a number of feet of the tin ore.  
e (mispickel) has also been found associated with the  
Ledoux property. This is somewhat similar to the Corn-  
s, where their work first penetrated through a body of tin  
to copper ore and again into tin ore. One thing to be  
connection with the deposits at this point is that the vein,  
arly perpendicular, or dipping a few degrees to the east,  
cross the lamination of the schist which is dipping toward

If a mile below the mill a great deal of float-tin has been  
oulders on the summit of a small hill, and the greater part  
hailed to the mill for treatment. The greisen outcrops  
his hill and small particles of tin ore were observed in  
boulders and fragments broken off. A large trench had  
the pegmatite, but it apparently failed to reveal the  
he rich boulders of greisen.

nt communication, Dr. Ledoux\* says regarding the work  
one in 1888 and 1889 under his direction on these tin  
at the rock was tested from various openings where they  
tion of containing tin, and that without any sorting they  
m 0.3 per cent. to 0.6 per cent. of metallic tin. With  
gro laborers who were simply instructed to throw in one  
ces which appeared to contain tin, and reject the others,  
the ore up to a grade which yielded from 0.75 per cent.  
cent. of metallic tin. It was found impossible to sample  
by hand or even to determine the average percentage of  
lumps where the work was being carried on, and for that  
orking plant consisting of a 10-stamp mill with vanners,  
ed buddle, and burlap sluices was erected. A number of  
put down with the diamond drill, principally for deter-  
character of the strata and whether the greisen extended to  
rable depth, which was found to be the case.

\*Ph Hyde Pratt, dated New York, May 6, 1904.

Adjoining the Ledoux property on the north is what is known as the limestone tract, deriving its name from the fact that there is considerable limestone on the property. There has been a small amount of float-tin picked up as fragments and in small greisen boulders. No ore has been found thus far in the limestone.

*Faires Property.*—On the E. C. Faires plantation, which is near the southwestern boundary of the town of Kings Mountain, considerable tin ore was found at a number of places 100 yards or so apart, which are about one-fourth of a mile southeast of where the town boundary line crosses the track of the Southern Railroad. There are a number of large masses of pegmatite outcropping here on the surface. About a quarter of a mile to the southwest, where this property joins the Weir plantation, a little tin ore has been picked up in some of the gulleys. As the pegmatitic dikes were followed in this direction they became wider, increasing from 40 feet on the Faires property to about 200 feet on the Weir property. If there is any tin associated with these large masses of pegmatite, it is probably in small quantity, as a casual prospecting failed to reveal any.

*Falls Property.*—To the northeast of the Faires plantation a small amount of work has been done on the Mrs. Lizzie Falls place on the opposite side of the branch from where the tin ore was found on the Faires place. A number of shafts were sunk and ditches cut; but few of them showed any tin ore. Considerable rich ore was encountered in one of these shafts, about 4 feet from the surface; but it gave out in a few feet, due to the pinching out of the vein. The seams of greisen were from 2 to 8 feet in width, following the lamination of the schists. The other shaft that was sunk, while it did not show as rich bunches of ore as the first one, was in ore at the bottom. Fig. 5 is a map of the country in the immediate vicinity of Kings Mountain.

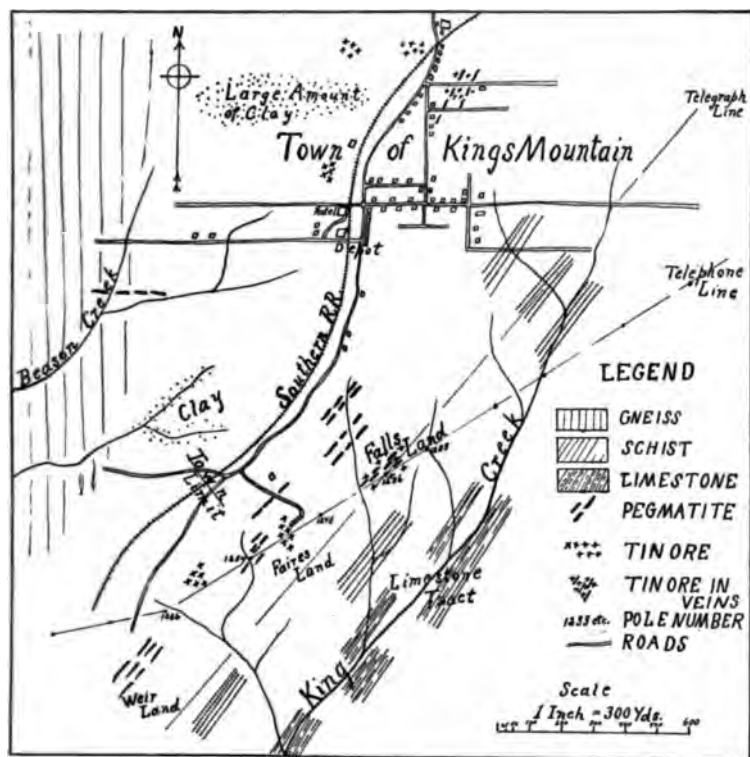


FIG. 5.—MAP OF THE KINGS MOUNTAIN TIN REGION.

The next place where cassiterite has been found in any quantity is in the northern part of the town, about 100 yards south of where the road crosses the railroad track. A number of small masses of greisen were observed containing more or less cassiterite. The mineral is in small pieces from the size of a grain of sand to that of a pea. This greisen can be traced across the Rudisill lot and is observed in the street beyond.

Fifty yards to the west of the railroad-crossing a small amount of float-tin has been picked up and near by small boulders of greisen have been observed. For a distance of 50 yards to the west tin ore can be picked up here and there over a considerable part of the surface.

*Carpenter Property.*—Following towards the northeast to the southern end of Chestnut Ridge, about 2 to 2½ miles northeast of Kings Mountain, on the property of Mr. M. M. Carpenter, of

Kings Mountain, a large number of boulders of greisen have been found which were very rich in tin, and weighing from 50 to 150 pounds each. The dike from which these boulders originated could not be located, but, judging from their appearance, it must be close by, and this locality is a very favorable one for prospecting. The schists have the general characteristic strike of the district, that is, N. 25° E. A quarter of a mile still further north, on Chestnut Ridge, numerous boulders carrying tin ore were observed.

*Chestnut Hill Vein.*—A little to the east of the summit of Chestnut Ridge, and about one-half mile from the Carpenter property, is what was formerly designated as the Chestnut Hill vein. A shaft was sunk here for a depth of 122 feet, following on a vein of tin ore that is reported to be 7 feet wide at a depth of 100 feet and to carry about 3 per cent. of tin oxide. There are contradictory reports regarding what was found in this shaft, and judging from the material that is on the dump pile, there was not a great deal of tin ore taken out of the shaft. According to Mr. J. C. Horton, who had charge of this work, the shaft penetrated through the vein, and it was the intention to sink this shaft to a depth of 130 feet and then drive a cross-cut to the vein. No work has, however, been done here for about 10 years, and, as the shaft was full of water, nothing definite can be stated regarding the conditions existing in the underground workings.

*Ormond Property.*—On the north end of Chestnut Ridge, on the property of Mr. J. J. Ormond, which is 3 miles northeast of Kings Mountain, considerable tin ore has been found in greisen boulders. It is reported that a trench made here encountered the greisen in place; but this is now filled up, so that nothing of this vein could be seen. The boulders observed were very similar to those encountered on the southern end of Chestnut Ridge, and this is also a favorable place for prospecting.

*Hovis Property.*—Only a few fragments of tin have been found in the next one and a half or two miles from the Ormond locality; but on what is known as the White lot, which adjoins on the north the M. V. Hovis place, boulders of greisen again become prominent, and these contain more or less cassiterite. On Mr. M. V. Hovis' property tin ore is found in fragments and boulders of greisen near the road and are constantly being plowed up in the fields. In the

gutters alongside of the road considerable black sand has been concentrated, consisting chiefly of cassiterite, magnetite and ilmenite.

*Ramseur Mill Property.*—About a third of a mile northeast is the Ramseur mill property, where a large pegmatitic dike is outcropping. Considerable cassiterite has been found as float and a trench cutting across this pegmatitic dike exposed a portion of this rock that contained cassiterite. The ore occurred near the contact of the pegmatite. It was very rich, and is another one of the places along the belt that is favorable for more thorough prospecting. There is a great deal of ilmenite, which occurs principally in flattened plates, found scattered over the surface of the field and on a road within 100 feet of the trench from which the cassiterite was obtained.

*Jones Mine.*—One of the most promising deposits of tin ore to the northeast of Kings Mountain is on the John E. Jones plantation, which is 7 miles northeast of Kings Mountain and  $3\frac{1}{2}$  miles a little northeast of Bessemer. A great deal of float greisen carrying cassiterite has been found on a small hill about 100 yards from the house and a number of shafts and open cuts have been sunk on small masses of greisen that were observed out-cropping on the surface. One of these, which was 2 to 3 feet wide, had a strike of nearly N.  $80^{\circ}$  W. and is cutting at almost right angles the trend of the gneiss. This vein carried considerable tin ore, and, judging from a test made by panning down a sample taken from the vein in the shaft, it would carry in the neighborhood of 5 per cent. of cassiterite. This vein varies very greatly in the percentage of cassiterite that it contains, and a cross-cut made about 70 feet west of the shaft showed only a little cassiterite, and another cut 70 feet still further to the west did not show any cassiterite at all, and the vein contained considerable altered feldspar. The shaft is now partially filled with *debris*, but it is reported that it continued in ore to the bottom. As far as it could be examined, it still showed good tin ore. There is an area on the slopes of this hill and along the branch, making an area of about 200 by 300 feet in which cassiterite has been found, and would represent the alluvial deposits that are known at the present time and which will probably pay to hydraulic. During the winter of 1903 and 1904 work was again begun on these deposits and the saprolitic rock and alluvium were being washed and concentrated in the stream



at the foot of the hill. Throughout nearly all the tin belt to the northeast of Kings Mountain the scarcity of water is a serious drawback.

#### OTHER TIN LOCALITIES IN THE UNITED STATES.

Cassiterite has been found at a number of localities throughout the United States, but usually in only small quantities and often simply as isolated crystals.

*Maine.*—In Maine\* cassiterite has been found very sparingly at Paris, Hebron, Winslow and Stoneham. At the two former localities it has been found well crystallized and associated with the beautiful tourmalines for which these localities are noted. They occur in pegmatitic dikes which have been highly mineralized. At Winslow, Maine, cassiterite has been found associated with quartz, mica and fluorspar in limestone. They occur in thin seams one to two inches in width, sometimes following, at others cutting across the stratification.

*New Hampshire.*—In New Hampshire† cassiterite has been found in some quantity in the town of Jackson and at Lime, in both places being associated with iron, copper and other sulphides.

*Massachusetts.*—At Chesterfield and Goshen, Massachusetts,‡ cassiterite has been found associated with tourmaline in pegmatitic dikes similarly as at the Maine localities, but it is not as well crystallized.

*Virginia.*—The occurrence of tin in Virginia was described by Mr. Arthur Winslow§ in 1885, and later by Mr. Titus Ulke¶ in 1893. This tin area extends along the eastern edge of Rockbridge county in the line of the Blue Ridge Mountains from a few miles north of the James River Gap to about the north line of the county. Cassiterite has been found at a number of places in this area, but the greatest amount of ore was found along the upper waters of Irish creek in the northeastern corner of the county. There is one property that has been developed to some extent, and this is known as the Cash mine. The greisen veins in which the tin occurs traverse the granite in all directions and are dipping at very steep angles.

\*Trans. Am. Inst. Min., Eng., Vol. I, 1871-73, p. 373.

†Dana Mineralogy, 6th Edition, 1892, p. 235.

‡Dana Mineralogy, 6th Edition, 1892, p. 235.

§Eng. and Min. Jour., Nov. 7, 1885.

¶U. S. Geol. Survey, Min. Res., 1893, p. 180.

The width of these veins is usually from 8 to 12 inches, though some were observed that were several feet in thickness. The cassiterite is occasionally concentrated into seams from 1 to 2 inches wide and is associated with pyrite and arsenopyrite, the rest of the gangue of the veins being composed of quartz and mica. The principal work was done here about twenty years ago, and a concentrating mill was erected on the property and about 290 tons of rock were tested. It is reported that about 2,400 pounds of tin concentrates were shipped to Boston, but that they only averaged about 43 per cent. of metallic tin, due to the concentrates being contaminated with arsenopyrite and ilmenite. There was not sufficient work done on the property to definitely determine whether or not there existed a commercial deposit of cassiterite.

*Alabama.*—Tin has been found in Coosa county, Alabama,\* near Brockford, associated with tourmaline, biotite and tantalite.

*South Dakota.*—The South Dakota† tin deposits have attracted the greatest attention, and a great deal of work has been done on the deposits in that State in an attempt to open commercial bodies of tin ore. The deposits lie to the west and south of Custer and throughout what is known as the Nigger Hill District, which is west of Deadwood, extending down into Wyoming. The principal deposits that have been opened up are known as the Etta and Ingersoll mines about 6 miles east of Harney Peak and 20 miles from Rapid City. The occurrence of the tin at both of these mines is very similar, and a description of one would fit closely that of the other. At the Etta mine there is a granitic knob in the form of a conical hill, which is cutting through mica and garnetiferous slates, and is about 250 feet high by 200 feet in its longest diameter and 100 to 150 feet in its transverse diameter, as measured across the outcrop. This mass of granitic rock has a somewhat concentric structure, the outer portions next to the slates being composed of a band or belt of dark-colored mica; then a zone of very large spodumene crystals with albite, feldspar and irregular bunches of crystals of mica and albite. Next is the greisen rock, which has cassiterite disseminated through it in small grains and imperfectly formed crystals. The centers of these granitic knobs are a mixture of quartz and feldspar.

\* Dana's Mineralogy, 6th Edition, 1892, p. 235.

† W. P. Blake, Trans. Am. Inst. Min. Eng., Vol. XIII, 1885, p. 691.

*Texas.*—Cassiterite has been found in Texas\* on the east flank of the Franklin Mountains, the southern extension of the Oregon or San Andreas Range, about 10 miles north of El Paso. These deposits were discovered in 1899 and had been prospected to a depth of about 50 feet. The ore occurs in well-defined veins, which have a strike approximately east and west, which is nearly at right angles to the direction of the range and are dipping toward the north at very steep angles. There have been three veins discovered here, which have been exposed by pits and open cuts for several hundred feet along the strike. The veins occur in the granite and are considered by Mr. W. H. Weed† to be the result of deep-seated agencies and that further exploration will develop well-defined tin veins.

*California.*—The California‡ tin deposits have also attracted more or less attention, and those in Riverside county in the Temiscal District have been producers to the extent of probably about 40,000 pounds of metallic tin. The principal mine in the district was the Cajalco on the San Jacinto estate. The tin deposits lie nearly in the center of a rudely semicircular area of granite about two miles in diameter, which is cutting the sedimentary rocks, quartzite, mica schist and conglomerate. In some instances porphyry is bordering the granite. Towards the outer edges of this granitic boss are numerous dikes of very fine-grained granite, consisting almost entirely of quartz and orthoclase feldspar in interlocking grains. This semicircular area of granite and portions of the adjoining porphyry have been fissured in a general north-east and south-west direction, while almost innumerable lines have been subsequently filled with black vein matter. These veins are usually small, varying from a quarter to a few inches in thickness, but in one case, that of the Cajalco vein, it reaches an enormous width. The vein material of this main vein and the smaller ones consists for the most part of tourmaline and quartz. The larger veins are very irregular and sometimes appear to be but bunches of vein matter in the granite. A few hundred feet northeast of this wide portion of the vein it has narrowed down to 6 or 8 feet. But little development work has been done on this property to prove the existence of large bodies of tin ore. Most of

\* Bull. U. S. Geolog. Survey, No. 213, p. 99.

† Ibid.

‡ Am. Jour. of Sci., Vol. IV, 1897, p. 39.

the money expended was on top of the ground in buildings, roads, etc. It is not at all improbable but that conservative development work would show the existence of a sufficient quantity of ore to make profitable mining.

Another locality in California that is attracting some attention is on the west slope of the Santa Anna Mountains in Trabuso Canyon, Orange county. This property is now being developed, but it has not been definitely determined as to the quantity of tin that it contains or whether it is possible to make it a producer of this metal.

*Alaska.*—Perhaps the most promising tin region in the territory of the United States, outside of the Carolinas tin belt, is that in Alaska,\* near Port Clarence, in the York region. Cassiterite has been found as stream tin at a number of localities in this region, principally on Buhner creek, about 10 miles east of Cape Prince of Wales, and on the Anikovik river, about half a mile below the mouth of Buhner creek. Tin has also been found in place by Mr. Arthur J. Collier, of the United States Geological Survey. Its occurrence is similar to that of cassiterite from other localities, and it is associated with fluorite, tourmaline and wolframite. Although undeveloped, the indications are such that it makes a promising locality for further investigation as to its commercial possibilities. Stream tin has also been found at Copper river, about 125 miles northeast of Valdez, by Mr. A. W. Tibbitt of that town.

*Other States.*—Other localities in the United States where stream tin has been found are in Crook county, Wyoming; near Dillon, Montana; and at Jordan creek, near Booneville, Idaho; but at none of these has there been any indication of the mineral occurring in commercial quantity.

It will be seen from the above that thus far no profitable tin mining has been accomplished in the United States and that all the deposits are still in the prospective stage. Considering, however, the value of tin ore, the quantity of the metal that is used in the United States and its limited occurrence in other parts of the world, the Carolina tin deposits are well worthy of a thorough, systematic investigation as to their commercial value. In some instances it will be found that

\* U. S. Geolog. Survey, Mineral Resources, 1900, p. 267.

a considerable portion of the cost of this development work will be paid for by the value of the cassiterite obtained.

#### FOREIGN TIN LOCALITIES.

*Malay Peninsula.*—The world's chief source of supply of tin is from the deposits on the Malay Peninsula,\* which extend from the extreme southern end of the Peninsula northwestward for a distance of about 350 miles to the border of the Siamese possessions. Throughout this entire distance tin ore is found in more or less quantity, and it has also been reported to occur still further north into the possessions of Siam; but up to the present time these latter deposits have been explored but little and nothing definite is known regarding their extent or commercial possibilities.

Extending almost the entire length of the Malay Peninsula is a long, high mountain range, forming the backbone of the Peninsula, and it is only on the western slopes of this range that the tin ore has been found. Although tin has been found over such an extensive area in the Federated Malay States, it is only from a few districts that it has been proved to be in commercial quantity. The State producing the largest quantity of tin is Perak, from which is obtained over one-half of the total quantity of tin obtained on the Peninsula, which in turn produces over half of the world's supply of this metal. The principal mining district of Perak is known as the Kinta, and this is the largest and most celebrated tin mining district in the world. Selangor is the second largest tin-producing State on the Malay Peninsula, but its production is far below that of Perak. Other States from which small amounts are mined are Pahang, Negri Sembilan and Johor. This latter State is at the extreme end of the Peninsula.

The tin ore is obtained almost entirely from the alluvial deposits, although deposits of tin have been discovered in granite and also in limestone. Up to the present time, however, these latter deposits have not proved to be profitable mining. The cassiterite is found in these alluvial deposits, sometimes scattered through it from top to bottom, but in most cases, however, there is an overburden of soil from 1 to 40 feet, which is almost entirely barren of any tin ore. The

\* Jour. Geol., Vol. XI, No. 2, 1903, p. 135.

most profitable alluvial deposits occur at the foot of the mountains. Higher up the mountain slopes it has been found richer, but on account of the very small area over which these extend, they do not make profitable mining like the more extensive areas lower down. The tin in the alluvium has undoubtedly been derived from the neighboring rocks, granite and limestone. It occurs in the granite in the form of small pockets or veins from which stringers are often running out, intersecting each other in various directions, forming often a network of tin-bearing seams. The principal minerals associated with the cassiterite are quartz, tourmaline, fluorite and pyrite. Where it is found in the limestone it is usually along the zone of fracturing, either as an impregnation or as lenses, or irregular pockets. Seams carrying tin ore are often found following the cracks in the rock and running out into it for some distance. The minerals associated with the cassiterite found in the limestone are for the most part sulphides, there being large quantities of pyrite and arsenopyrite with smaller amounts of the copper minerals, chalcopyrite and bornite.

The general method of working these deposits is by open cuts or large pits, but in those cases where the overburden is too deep, shafts are sunk until the tin-bearing strata are encountered. On account of the difficulty of taking care of the water, the pits and cuts that are made by Chinese are usually shallow, seldom averaging over forty feet deep. After the tin-bearing alluvium has been brought to the surface, which has been accomplished by means of small baskets hung on both ends of a stick and suspended on a man's back, it is dumped into long wooden troughs, in which there is a stream of running water. If there is much clay in the alluvium, the material is stirred with shovels and hoes to separate the tin ore. The materials are carried by the water from the troughs into sluice boxes, where the tin ore and other heavy minerals sink to the bottom, while the lighter materials are carried away by the stream. These sluices vary from a few feet to several hundred feet in length, according to existing conditions, and are made of wood. Occasionally cuts are made in the sandy clay of the region, which are used in place of the wooden troughs. After this operation has been carried on for several hours, the flow of water is stopped and the material that has been concen-

trated on the bottom of the sluice boxes is still further concentrated by panning in flat wooden bowls, which in shape are similar to the ordinary iron gold-pan. The concentrates are still further purified by picking out by hand the magnetite and other heavy minerals. The final product contains from 69 to 73 per cent. metallic tin.

Formerly all the tin ore was smelted at local works in the various districts, but now it is nearly all treated at the smelters of the Straits Company, located at Singapore. The agents of this company are in constant touch with all the producers of tin so that they practically control the output of tin ore from the various mining districts. On account of a high export tax which has been placed by the Government on tin ore, it is impracticable to attempt to smelt these ores elsewhere. Before this export tax was imposed, a company had been organized in the United States whose object was to erect a smelter and to treat tin ores. Their source of supply was to be mainly from the Malay Peninsula. On account, however, of this export tax the project has failed.

*Banka and Billiton.*—On the Islands of Banka and Billiton, which are 200 to 300 miles southeast of the southern extremity of the Malay Peninsula, is located the second largest tin mining district of the world. These islands are owned by the Dutch, and the Banka mines are worked by the Government, while those on Billiton are operated by an independent company. The production from Banka is over three times that from Billiton, and is probably due to the Government having supervision of the mines. The combined Banka and Billiton mines produce a little over one-fifth of the world's production of tin. The occurrence of the tin on these islands is very similar to that on the Malay Peninsula.

*Sumatra.*—On the Island of Sumatra, in the District of Siak, tin has been found, but on account of the inaccessibility of the district and of the internal troubles between the natives and the Dutch Government, these deposits have not been thoroughly explored.

*Bolivia.*—The Bolivian deposits\* are the third largest producers of tin, their output being about one-tenth of the world's production. Tin has been found over a wide area along the eastern edge of the Bolivian table-land, which forms the extreme western part of Bolivia, for a distance of about 300 miles in a north and south direction,

\* Min. Ind., 1892, p. 543.

across the Departments of La Paz, Oruro and Potosi. There are a number of localities in each of these Departments where tin occurs in paying quantities and is being mined at the present time. The principal deposits which are known are Huayna, Potosi, Totoral, Berenguela, Tres Cruces, Sayaquiri and Quisma-Crur in the Department of La Paz; Huanuni, Colquiri, Negro Pabellon, Antigua and Morococala in the Department of Oruro; and Llallagua, Apacheta, Chorolque and Tazna in the Department of Potosi. These deposits are at an altitude of from 13,000 to 15,000 feet above sea-level, and some of them, as those in the great Chorolque Mountain, are 17,000 feet high. The tin ore occurs in veins which are dipping at angles from  $50^{\circ}$  to  $70^{\circ}$  and vary in width from a mere seam to 25 or more feet in width. These veins are found cutting through the metamorphic shales and also in the adjacent igneous rocks. The tin minerals usually occur in streaks in the veins, the gangue being made up largely of silica, with some feldspar, the latter being more or less kaolinized. As a rule, however, the gangue matter is solid.

It has been estimated that the ores in Huanuni and Avicaya will average from 10 to 12 per cent. metallic tin. The ores are crushed either by stamp mills or by crushers and rolls and then sieved. The pulverized material is then passed through hydraulic separators, slimes or lighter material being carried off at the top into settling tanks, after which it is treated in round buddles and on Wilfley tables. The coarser material from the hydraulic separators is classified in trommels and concentrated in automatic jigs. The concentrates are further treated by washing in sieves, after which they are dried and sacked for export. Some of these deposits have been worked to a depth of 300 to 400 feet, but it has not been proved definitely as yet to what extent they will prove profitable.

*England.*—The Cornish tin mines of England\* are perhaps the most widely known of any of the deposits of this metal, and were undoubtedly the first to produce tin. For over 2,000 years these deposits have been furnishing England with tin, and are still producing at the rate of 4,000 tons or more per year. The alluvial deposits were formerly worked very extensively, but at the present time it is from the under-ground mines that the tin ore is

\*Trans. Min. Ass. and Inst. of Cornwall, Vol. III, Parts 1 and 2; and Mineral Industry, Vol. I, 1892, p. 439.



obtained. The veins occur principally in granite overlain with a slate, and are dipping at high angles to nearly vertical. Cutting both these rocks are a series of quartz-porphyry dikes, while the veins carrying the tin traverse all three of these rocks, thus showing that they were formed at a later period than any of the others. Where these veins are found cutting the slates they are not apt to carry very much tin, but more copper; while on the other hand, as they penetrate into the granite the copper gives out and they become rich in tin. While there is a main vein or leader which can be constantly followed with a permanent dip and strike, there is constantly branching out from this stringers and seams which penetrate into the adjoining country rock, and sometimes are so large that they exceed in extent the main lode. Then again, portions of the country rock itself are impregnated with the tin ore, so that there is a gradation from the ore to the barren country rock. This is true of the veins in the slate and also in the granite. Occasionally a lead will be opened up that has a slate for one wall and a granite for the other. These are the deepest workings of any in the history of tin mining, and they are now down over 2,000 feet below sea-level. The rock as it is obtained from the mine is usually crushed in stamp mills, the larger lumps being broken by hammers. It is crushed in these mills fine enough to pass through a 40-mesh screen, from which it is carried by water to the concentrating room, where various appliances are utilized to effect this concentration.

*Australia.*—The production of tin from Australia is now beginning to exceed that from England, and these deposits are taking a prominent place in the world's production of this metal. It is mined in New South Wales and Queensland and on the Island of Tasmania. It has also been found in Victoria; but its production in this latter province is very small. In Western Australia tin was discovered in the latter part of 1888 near Bridgetown, and the alluvial deposits have been worked on a small scale; but until a larger water supply can be secured they cannot be developed as fully as the percentage of tin warrants. The Government has recently erected a tin-dressing plant as an aid to the development of the tin mining industry in that section.

In New South Wales the principal mining sections are at Emma-

ville and Tingha, in the northern part of the colony. At Tingha, Hardinge county, the alluvial deposits are worked by dredging, and a considerable area of rich ground has been shown to exist in the beds of Coke's creek and tributaries. The largest amount of work has been done in the vicinity of Emmaville, Clive county. Other localities in New South Wales where tin deposits are being developed are at Silent Grove in the Deep Water District and at a number of places in the Broken Hill District.

The tin deposits of Queensland are in the Herberton District, which comprises an area of about 750 square miles, and this district produces about one-half the tin obtained in Australia. Irvinebank is the principal center of this mining district, and in its vicinity are two of the largest producers, the Vulcan and Tornado mines. Other districts in Queensland which are producing small amounts of tin are Cockestown, Kangaroo Hills, Palmira and Stanthorpe. Nearly all the tin that is mined in the Herberton District is from veins, while that from the other districts is obtained from alluvial deposits.

*Tasmania.*—The tin deposits of Tasmania\* were discovered at an early period in the history of this colony, but not until 1872 were any profitable deposits found. In that year was discovered the great Mt. Naschoff, which has continued to be the largest producer in Tasmania. While at first mining was confined entirely to the alluvial deposits, now the greater part of the tin is obtained from deep mining on the veins.

*Mexico.*—In Mexico there are numerous localities where tin has been found, and it offers a promising field for prospecting for this metal. The principal deposits are at Potrillos in the State of Durango; at Sain Alto in Zacatecas; in the Santa Mario del Rio District of Sain Luis Potosi. This belt, which extends in a northwest direction, produces each year a few hundred tons of tin, all of which is used in Mexico. Both veins and alluvial deposits are worked; but at the present time the most of the production is from the latter deposits.

*Other Localities.*—Tin has also been found and worked in certain parts of China, but little is known regarding its occurrence or the amount of production. There is also a small amount produced in

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\*Min. Ind., 1892, p. 451.

Japan and Burmah. Tin deposits have been reported from Peru and Chili in South America, but as yet have not become producers of this metal. In Europe there are small amounts of tin that have been reported from Spain, Portugal, Germany and Austria, but the combined production from these countries is very small as compared with the world's production.

There has been a small amount of tin ore produced in Swazieland, South Africa. The deposits from which the ore was obtained are on the eastern slope of the Drakensberg Mountain, about 15 miles from the Transvaal border.

#### ORIGIN OF THE TIN ORE.

It is the authors' idea regarding the origin of the tin ore found in the Carolina belt, that it is due partly to the direct separation or recrystallization of the cassiterite from the molten pegmatite magma, but it is also due to a fumarole action, resulting from the escaping vapors during the crystallization of the molten magma of pegmatite intruded into the schists and gneisses in the form of dikes, which in turn had thrown off apophyses and lens-shaped masses or "augen," that have been subjected to the same reactions as the main mass of pegmatite.

#### HISTORICAL.

In discussing this method of origin of the tin ore, consideration has been given to the theories advanced for the origin of other occurrences throughout the world, and there are given first short statements regarding these.

Regarding the origin of the tin in the granites in the Kinta District of the Malay Peninsula, Mr. R. A. F. Penrose\* says:

"In the granite, the occurrence of the cassiterite in veins, stringers, networks, etc., along lines of fracturing, are strong evidences of aqueous deposition of the ore; while the occurrence as an impregnation in the rock where no marked fissuring occurs, may be due either to segregation during a more or less molten condition of the rock or to aqueous concentration in a solidified rock. It is possible that the tin was originally a disseminated constituent of the granitic rocks; and in places its concentration may have been due to segregation from a molten mass, but there can be no doubt that some of the concentra-

\* Jour. of Geol., Vol. XI, No. 2, 1904, p. 149.

tion, as at present seen, was due to water action after the solidification of the rock."

Mr. W. H. Weed,\* in discussing the El Paso, Texas, deposits, says:

"The veins exhibit the usual characters of the European tin veins, notably those of Cornwall, England, their clearly-defined fissures showing a central core of lead or coarse quartz, sometimes containing tin ore, and flanked on either side by altered rock, in which the tin ore replaces the feldspar of the granite. Where this metasomatic replacement is complete, the ore shows a mixture of cassiterite with or without wolframite and quartz. Where the replacement is only partial, the greisen ore fades off into the unaltered granite. A cross-section of the vein shows, therefore, the same phenomena seen in Cornwall. The central mass of quartz corresponds to the 'leader' of the Cornish veins. It is composed of massive, coarsely crystalline quartz, sometimes showing comb structure, and it is clearly the result of the filling of the open fissure by quartz. The adjacent ore-bearing material is a replacement deposit in which the mineral solutions have substituted for the feldspar of the granite by metasomatic action; in other words, the main mass of the ore occurs alongside of a quartz vein, and is due to the alteration of the granite forming the walls of the fissure. In general, the ore passes into the granite by insensible transition, and there are no distinct walls."

Dr. H. W. Fairbanks,\* in discussing the large Cajalco vein of California, says:

"The deposits have evidently been formed in fissures through a gradual replacement of the granite walls. Judging from an examination of the seam-like veins, the silicates appear to have been attacked easier and removed first. In places the larger veins seem to blend into the granite, and it was at first thought that some of the quartz might be a remnant of the granite, as it is rarely, if ever, segregated in bunches. A microscopic examination showed that this view was undoubtedly false, as the grains interlock in a different manner from those in the granite, and in addition contained fluid and liquid inclusions. The relative proportions of quartz and tourmaline in the Cajalco vein are so constant that it represents a uniform appearance. \* \* \* The bunches in these veins, and especially

\*Bull. U. S. Geol. Survey, No. 213, 1902, p. 100.

\*Am. J. Sci., Vol. IV, 1897, p. 41.

the enormous one forming Cajalco hill, could have been formed in no other way than by replacement, although it is difficult to conceive of its having taken place on such a large scale."

The origin of the cassiterite occurring in the small veins in rhyolite that are found at Sain Alto, Mexico, is referred to by the Geological Institute of Mexico,\* which makes the following statement:

"The veins appear to have been formed from lines of fracture produced by contraction due to cooling and to have been filled by direct emanation. The associated minerals are hematite, topaz, and in some places durangite—that is to say, two minerals which contain fluorine, thus bearing evidence of the identity of the agent employed by nature in bringing tin to the surface in the same state of combination and at different and widely separated geological periods, and always, be it remembered, in the most acid rocks of the two series of eruptions; in the ancient series tin appears in granite containing white mica, while in Mexico, where the most impure emanations of tin have taken place, it appears in rhyolite of the upper Tertiary."

Dr. Albert R. Ledoux,† in discussing the deposits of tin in North Carolina, says:

"Having secured permission to investigate the properties, we examined them by open cuts and shafts in perhaps half a dozen places for an extent of, occasionally at least, 2 miles north and south, and I have also visited openings which others have made since we began operations, at a distance of 6 or 7 miles from the village. We also put down a number of holes with a diamond drill for the purpose of determining the character at considerable depth. The drill, I may say here, shows these greisens apparently to be large, irregularly bedded masses, their vertical extent being in no way determinable by their appearance on the surface. They are unquestionably bedded veins, although occasionally, when cut by trap dikes or from other local causes, taking on the appearance of true fissure veins. Our deepest hole has shown layers of schist and greisen, greisen and slate, slate and greisen, etc., indefinitely."

Professor William Blake,‡ commenting on the origin of the tin ore found in the Black Hills, says:

\*Bulletins Nos. 4, 5, 6, 1897, pp. 234, 235.

†Eng. and Min. Jour., Vol. 48, 1889, p. 521.

‡Trans. Am. Inst. Min. Eng., Vol. XIII, 1885, p. 695.

"In the numerous tin veins and tin-ore-bearing granitic dikes of the Black Hills tin region, the phenomena of occurrence and association indicate that all of the minerals of the dikes—the quartz, feldspar, spodumene, mica, beryl, columbite, tantalite, phosphates, and other associates of the cassiterite, were contemporaneous in origin. The tin-stone is apparently as much a part of the mass as the mica or quartz. It was, to all appearance, present when the whole mass assumed its crystallization. All the constituents of the dike appear to have crystallized from a semi-fluid or pasty magma, in which the elements were free to arrange themselves from one side of the dike to the other and to crystallize out slowly. This is indicated in several ways, but strikingly by the gigantic crystals of spodumene stretching across the mass at the Etta, in straight lines, for 20 to 40 feet, in the midst of quartz, feldspar and tin ore."

The occurrence of the South Dakota tin ores is unlike that which would be expected to be seen in narrow fissures that have been filled gradually by solutions depositing layer after layer on each side of the fissure until the same becomes filled up. There is also a decided lack of any signs of infiltration or of alteration or of replacement of the minerals by tin-stone, and thus this has the appearance of being one of the original constituents of the granite.

Mr. J. H. Collins,\* in commenting on the Cornwall cassiterite, states that it occurs as

"(1) pebbles, rough masses or grains (stream tin); \* \* \* (2) filling of definite fissures in granite, slate and porphyry; \* \* (3) the filling of minor joints and shrinkage cracks (the latter, when numerous, form stock works); \* \* \* (4) cementing material for conglomerates and breccias in fissures; \* \* \* (5) as a constituent of ancient breccias occupying the fissures; \* \* \* (6) as a minor constituent of granite, porphyry and in tourmaline schist; \* \* \* (7) as a pseudomorphous replacement of feldspar, quartz, etc; \* \* \* (8) as pseudomorphous replacement of organic structure."

Professor J. F. Kemp,† in speaking of the deposits of tin ore in a general way, says that they have been especially developed along the contacts of granite intrusions.

\*Min. Mag. London, Vol. IV, 1880.

†Ore Deposits of the United States, 1900, p. 69.

"Granite, as is well known, is the most potent of all rocks in bringing about contact metamorphism. It seems to be especially rich in mineralizers, and as its great, intruded, batholithic masses slowly crystallize, they emit boracic, hydrofluoric and other vapors in exceptional volume. Wall rocks are greatly corroded and charged with tourmaline, fluorite, axinite, topaz, fluoric micas and cassiterite. Pegmatite dikes or veins are sent off as apophyses, and are charged with the same association of minerals. If the walls themselves are granitic in composition, the feldspar becomes greatly corroded, and may be replaced by quartz and fluoric micas with more or less cassiterite. Pegmatites consisting essentially of the same minerals are also produced, and both varieties are called greisen, and are recognized as the characteristic gangue of tin ores the world over."

Again, on page 442, Professor Kemp says:

"Cassiterite occurs in small stringers and veins on the borders of granite knobs or bosses, either in the granite itself or in the adjacent rocks, in such relations that it is doubtless the result of fumarole action, consequent on the intrusion of the granite."

Cassiterite was first made synthetically by Darubree\* by decomposing the vapors of the bichloride of tin ( $\text{SnCl}_2$ ) with steam at high temperature, the products obtained being small crystals, identical in form with the natural cassiterite. Henri Sainte-Clair Deville and Caron† produced artificial cassiterite or tin oxide ( $\text{SnO}_2$ ) by a similar method, but using vapors of the fluoride of tin instead of the chloride. These crystals of tin oxide which were obtained were also identical in form with the natural product.

#### EVIDENCE BEARING ON ORIGIN.

This synthetical production of tin oxide, identical in composition and crystallization with natural cassiterite, offers a clue to the origin of some of the deposits of this mineral, and is strong evidence that considerable of the tin oxide found in nature has been produced by the action of vapors of tin chloride or tin fluoride on the masses and dikes of pegmatite veins by the metasomatic replacement of the feldspar with tin oxide. This has more probably been accomplished by the action of the fluoride; for of the associated minerals that are found

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\**Synthese des Mineraux et e des Roches*, by Fouque et Michellevy, 1883.

†*Loc. cit.*

with the cassiterite (tin ore), those that contain fluorine are common; while seldom, if ever, are any of the chlorides or minerals containing any appreciable amount of chlorine found. The hot steam vapors which would be present, especially along the contact of these pegmatitic masses and dikes, with the other country rock would react with the stannic fluoride ( $\text{SnF}_4$ ) in the formation of the tin oxide ( $\text{SnO}_2$ ), setting free probably hydrofluoric acid ( $\text{HF}$ ), which would readily attack any of the silicates, replacing them, to some extent at least, with the tin oxide and forming the silicates containing fluorine and also producing some fluorite, calcium fluoride. This would also account to some extent for the honey-comb appearance that is often observed in the quartz carrying tin.

As has already been stated, there are three occurrences of the cassiterite in the Carolina belt: (1) As lenses and veins in the schist whose strike and dip correspond approximately to that of the schist; (2) the more clearly defined veins, which are cutting across the lamination of the schist or gneiss; and (3) veins occurring in gneiss, as those at the Ross mine. All of these veins are considered as belonging to the same pegmatitic formation, and to have been formed at the same time. There is one large and almost continuous dike which has been observed, which can be traced almost continuously from a short distance above Kings Mountain nearly to Grover, North Carolina, a distance of 7 miles, varying in width from 25 feet to nearly 200 yards. These pegmatitic dikes, which have for the most part resisted alteration and erosion better than the surrounding schists, outcrop prominently and can thus be readily traced across country. This pegmatitic material occurs as a series of lenticular-shaped masses breaking through the schist approximately paralleling the main dike of pegmatite. These masses of pegmatite are separated from each other by schist and often pinch out along the strike. Before, however, they have given out entirely another lens is apt to be encountered.

This occurrence is represented in Fig. 6, which shows the irregular mass of the main pegmatitic dike parallel to which are what seem to be a series of the lenses of pegmatite, which are connected with each other by very narrow seams of pegmatitic material. As this main mass of pegmatite was intruded into the schist the apophyses, which



were thrown off from the main mass and forced their way up between the laminations of the schist, would have a tendency not only to form a series of lenses in a vertical direction, but also horizontally, and this latter series would, upon erosion, be exposed on the surface similarly as represented in Fig. 6.

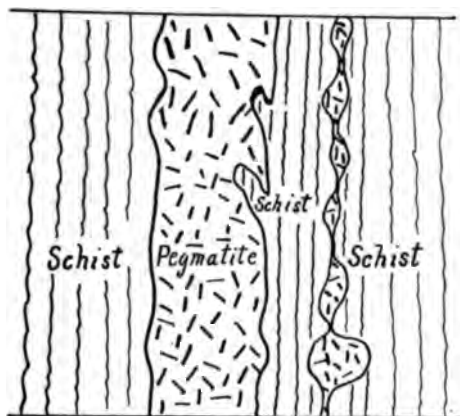


FIG. 6.—A HORIZONTAL CROSS-SECTION OF A MASS OF PEGMATITE INTRUDED INTO SCHIST.

In general, where pegmatitic dikes are cutting through schists, following closely the strike of the laminations of the schist, they are apt to be irregular and to throw off numerous apophyses, which ramify between the laminations of the schist, giving the pegmatite a very irregular and peculiar outline. In Fig. 7 (p. 47) is an ideal vertical cross-section of such a mass of pegmatite intruded into the schistose rock where the strike of the dike is approximately that of the schist. Such a mass of pegmatite, upon erosion, would appear on the surface to be made up of a series of separate masses of pegmatite, while in reality they would all be parts of the same dike. Such an appearance is illustrated in Fig. 8 (p. 47), which shows ideally a horizontal cross-section of the same mass of pegmatite which is illustrated in Fig. 7, if this had been eroded to line AA. The apophyses 1, 2 and 3 of Fig. 7 would appear on the surface as distinct and separate masses of pegmatite, 1, 2 and 3 of Fig. 8, and which apparently have no connection whatever with the main mass of pegmatite, 4 of Fig. 8 being separated from it by the schist.

Such occurrences of pegmatite showing similar irregularities in structure have been observed in the northern part of North Carolina

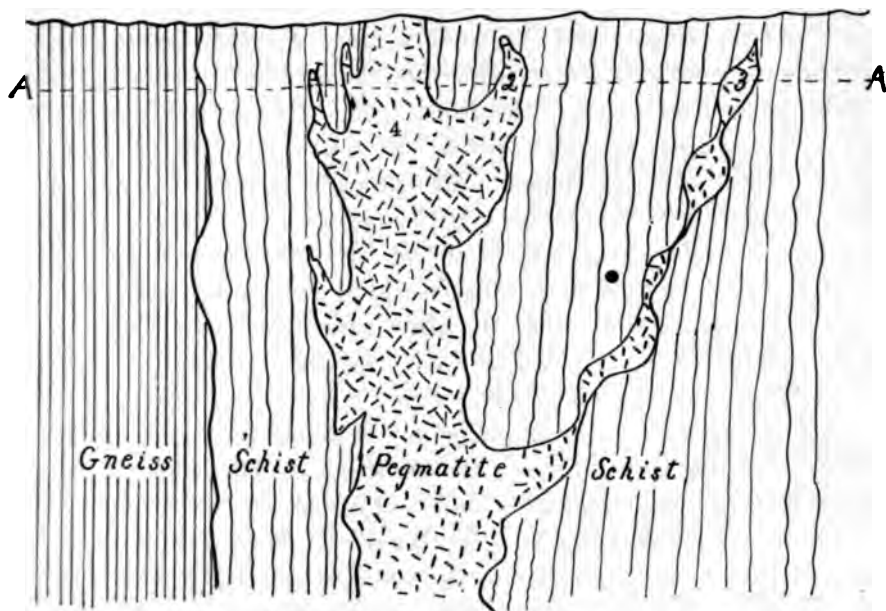


FIG. 7.—IDEAL VERTICAL CROSS-SECTION OF AN IRREGULAR MASS OF PEGMATITE INTRUDED INTO SCHIST.

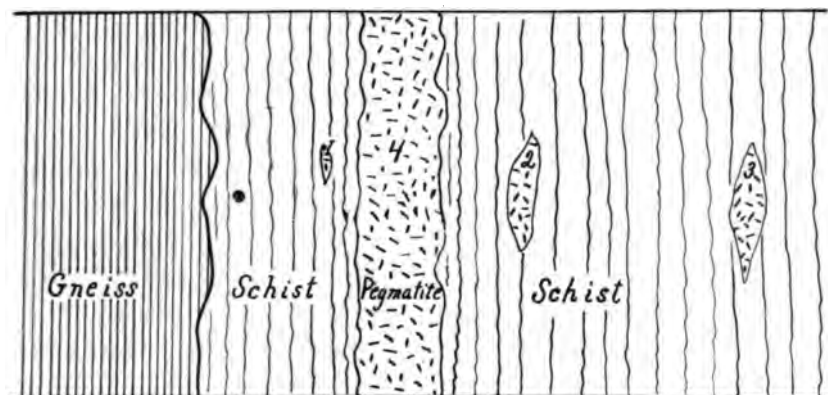


FIG. 8.—IDEAL HORIZONTAL CROSS-SECTION OF A MASS OF PEGMATITE IN SCHIST.

in Mitchell and Yancey counties, where these dikes contain commercial quantities of mica, and mining is being carried on for this mineral. At the Burton and White mica mine, Mitchell County, an occurrence of pegmatite was observed of which Fig. 6 would be an almost exact reproduction. This is also true as the pegmatitic formation is followed northeastward, all the dikes or veins being of rather narrow width until the Ramseur Mill property is reached, where a mass of pegmatite was observed 200 feet wide.

Where the pegmatitic dikes are cutting across the strata of the sedimentary rocks they are more even in width, and are usually occurring as a single distinct dike. In many cases these cross dikes are in the vicinity of the amphibolite dikes, and are approximately parallel to them, and they may have followed a fracture formed at the time of the intrusion of the amphibolite. More rarely the pegmatitic dikes are cutting across not only the schist but also the amphibolite. The fluorine minerals that have been found associated directly with the tin ore are tourmaline and a fluorine mica. There has also been a considerable tourmalinization of the schist to the east of these pegmatitic dikes. Where the wall rocks do not contain any feldspar they are not as apt to be affected by the action of the vapors as where the feldspar forms a prominent constituent of the rock.

After the intrusion of these pegmatitic dikes, and as they began to crystallize, they were giving off boracic, hydrofluoric and other vapors, which corroded the wall rocks, reacting on the minerals present in them, especially if they happen to be feldspars, and charging these wall rocks with tourmaline, fluoric micas, etc.

There has been thrown out from the main mass or dike of pegmatite apophyses of the same material, which are also charged with these vapors and gases, which react in the same way as in the larger mass. Thus, where there is a large mass of pegmatite, the mineralization is along the borders of this and in the walls of the adjacent rocks and in the apophyses and lens-shaped masses that have been thrown off; while there is but little change within the main mass of the pegmatite itself. In this way is formed the tourmaline that is observed so abundantly in some of the rocks adjoining the pegmatite. There was no occurrence observed where the rocks were impregnated so abundantly that it could be called a tourmalinization of the wall rock.

The tourmalinization that has taken place in the Carolina field has all been east of the tin belt.

Where the pegmatites are cutting gneisses containing considerable feldspar, the reactions of the hydrofluoric and other acids have been spent in some degree on this feldspar as well as on the feldspar of the pegmatitic dike itself. Thus, in these veins, as would be expected, there is more or less feldspar associated with the tin. Where these dikes have cut through schists, the original feldspar of the dike would be apt to be pretty thoroughly replaced by other minerals, as tourmaline, cassiterite, etc.; as this mineral would be acted upon more readily than any of the others. Thus, in the tin veins cutting the schists, the vein material consists almost entirely of quartz, mica and tin, the two latter minerals representing, at least in part, replacement products of the feldspar.

There was not observed in any of the veins examined any indication of a ribbon structure or any other structure that resembled the filling of narrow fissures by depositions from solutions from the sides of the fissure.

The cassiterite occurs more or less crystallized in a matrix of quartz and mica, with occasionally feldspar. Where the dikes are very small it is rather evenly distributed throughout the vein, but where it occurs in the broad dikes or lenses it is more generally concentrated toward one wall or the other.

Many of the facts stated above would apply to the theory that the tin oxide was an original constituent of the igneous magma instead of being in the form of the fluoride; and it may be that it has been partially formed in this manner, but still it seems as though the argument was in favor of the fumarole action, resulting from the escaping vapors during the crystallization of the molten pegmatite magma. The absence of feldspar in the dikes which are cutting the schist and its presence in those cutting the gneiss, when all the dikes are of the same geological formation, are in favor of the latter view.

**METHOD OF CONCENTRATING THE TIN ORE.****ALLUVIAL DEPOSITS.**

At the present time the only tin ore that is being mined in the Carolina belt is that which can be treated hydraulically, and consists of gravels, soils and saprolitic veins carrying tin. This material is washed similarly as in placer gold mining by first throwing the gravels, etc., on a perforated plate to eliminate boulders, twigs, etc., and then by running the material through sluice boxes. It is not necessary as a rule to use more than one or at most two boxes to save all the tin. These sluice boxes are about 8 feet long by 20 inches wide and 20 inches deep. There are two men required to operate each of these boxes, one to charge the gravel on to the perforated plate, which is fastened on to the upper end of the box, and the other to work the material in the sluice boxes up and down so as to permit the lighter materials to be carried off by the water. These boxes are usually cleaned up at the end of each day and the concentrates dried. In some instances a very pure tin concentrate has been obtained that did not require any further refinement. In the South Carolina portion of the belt concentrates are apt to be diluted with monazite and garnet, while in the North Carolina portion of the belt the principal accessory mineral is generally ilmenite.

It may be found advantageous, however, to run the concentrates, after they have been dried, over a magnetic separator in order to remove any ilmenite or magnetite that may happen to be present, and also by this same process any wolframite, garnet, or even monazite, that is present can be removed. The Wetherill magnetic separator could be used very advantageously for this purpose.

Thus far there has not been observed in the concentrates any sulphides or arsenides in sufficient quantity to detract from the value of these concentrates, and which, if present in any amount, would make it necessary to roast the ore to eliminate the sulphur and arsenic. If these were present, the magnetic separator could be so adjusted as to undoubtedly remove at least the iron sulphides.

Sluicing is being carried on at the present time at the Ross mine, near Gaffney, S. C., and at the Jones mine, 7 miles northeast of Kings Mountain.

Where sufficient water can be obtained and power developed, all of the soil, gravel, etc., can be readily washed down, often advantageously first through ditches cut into the ground and then into the sluice boxes, so that there is no necessity of handling the materials until the concentrates are taken out of the sluice boxes. As has been stated, however, in many sections of this tin belt water is rather scarce, so that a sufficient quantity could not be obtained for this purpose, and it would be necessary to excavate the gravels, soil, etc., and haul them to where they could be dumped on to the perforated plates above the sluice boxes. This is what is now being done at both the Ross and Jones mines. At the former mine, however, the stream which flows at the foot of the hill is being dammed, and it is expected that a sufficient quantity of water can be stored up so that the whole hillside can be washed down without the necessity of hauling any of the material by wagon.

At the Jones mine water is still more scarce, and it is questionable whether a sufficient supply can be developed to hydraulic the hillsides. The ore in the vein at this mine is composed largely of quartz and mica, making a rather solid ore, which would have to be crushed before it could be concentrated. It crushes, however, very easily, and the tin readily frees itself from the gangue minerals.

At the Ross mine, on the other hand, where the vein is composed largely of kaolinized feldspar, it is readily broken down by water and requires no crushing.

All of the ore that cannot be washed down by hydraulic processes is being mined by means of open cuts, pits, etc.

#### VEIN TIN ORE.

In treating the ore, where it occurs in a hard vein formation, it will first be necessary to crush it. On account, however, of the position of the tin in the vein, it will often be found that the ore can readily be hand-sorted as it comes from the mine, so that a considerable concentration can be made before the ore goes to the crusher, thus eliminating a great deal of waste material which otherwise would have to pass through this machine. The ore will crush very readily, and as a rule the cassiterite separates itself very easily from the gangue minerals, so that it is not necessary to crush the ore to very fine sizes. This can be accomplished either by running the ore through

a crusher and stamp mill and then passing the crushed product over Wilfley concentrating tables or by using a crusher and rolls and then running the crushed ore on to concentrated tables or on to ordinary jigs. In this way a very pure tin concentrate will be obtained, which will be freer from accessory minerals than that obtained from the placer deposits; for, as has been stated above, there are but very few minerals directly associated with the tin in the veins.

#### **ECONOMIC VALUE OF THE CAROLINA TIN DEPOSITS.**

The practical question that is at once raised regarding the occurrence of tin in the Carolinas is whether it will pay to work these deposits. There is no question whatever but that the alluvial deposits, like those at the Ross mine, will pay to work and give large returns on the amount spent in obtaining the tin concentrates. These deposits, however, are carrying from 12 to 40 or more pounds of cassiterite to the cubic yard. A large proportion, however, of the alluvial deposits throughout the whole belt will not carry more than a few pounds of cassiterite to the cubic yard, which would mean from 1 to 4 pounds of metallic tin. With tin valued at 25c., this would mean that the alluvial deposits would be worth from 25c. to \$1 per cubic yard, and would very probably pay to work, if operated on a large scale, even when the cost of pumping water is taken into consideration, especially as the conditions for mining in the Carolinas are so favorable. Sluicing could be carried on with but few days of interruption throughout the entire year; and then labor is cheap, miners receiving from 75c. to \$1.25 per day. Cord wood can be delivered for \$1.50 to not over \$2 per cord, and consisting of the best firewood, being a mixture of oak and pine. Timber and other supplies can also be obtained at very reasonable prices. The greatest expense will be the installation of the pumping plant and storing of water for hydraulicing.

Regarding the economic value of the tin ore occurring in the veins, this is a little more problematic. Still if the veins contain but one per cent. of metallic tin, this would make an ore worth \$5 per ton and would undoubtedly make a profitable proposition, if the deposits can be shown to contain a sufficient quantity of ore, so that a plant could be installed that would be capable of treating about 500 tons of ore

daily. Of course before there should be any expenditure made to equip any of the properties with machinery for treating the ore on a large scale further explorations and tests should be made.

### EXTRACTION OF TIN FROM ITS ORES.

#### REDUCTION OF THE ORES.

As the ore of tin consists simply of the one mineral, cassiterite, the stannic oxide, the metallurgy of this metal is comparatively simple, the reactions involved in the reduction of these ores being theoretically of the simplest character, but practically they are complicated by certain mechanical as well as chemical reactions that enter in. These are due to the high temperature of the reduction, which causes also a reduction of the oxides of other metals that are invariably present with the tin, which are apt to alloy with it, this being especially true of the iron. Then again, the furnace in which the tin ore is reduced must be capable of resisting the high temperatures required for this reaction, and if the furnace lining is an acid one, consisting of silica or silicates, there is produced a certain amount of tin silicate; and if a basic lining of magnesia or lime is used there is a certain amount of stannates formed. The silica or acid linings are more generally used, as most of the tin ores contain a certain amount of silica or silicates. Thus, while the ore is readily reduced to metallic tin, only a very small amount is obtained as a nearly pure tin. There is a great deal left in the slag and as "hard head," so that it is necessary to re-work the slags and also refine practically all of the tin obtained by the first reduction. Mr. Henry Louis\* has given a thorough and exhaustive description of the metallurgy of tin, and in this paper he divides the reduction of this metal into three stages, as follows:

"(a) Reduction or tin smelting proper; (b) refining the impure tin; (c) cleaning the slags. Each of these stages may be performed in more than one way, and to their various combinations the different local modifications of tin smelting are due.

"Tin smelting proper is conducted either in shaft furnaces or in reverberatories. The former method requires as an essential condition a supply of very pure fuel—such as wood charcoal—in sufficient

\* Mineral Industry, Vol. V, 1896, p. 533.



quantity and at a reasonable price, and is best suited to ores in not too fine a state of division and of a high degree of purity. The latter method requires a fuel capable of giving a hot flame and can be applied to less pure ores and to ore that has been very finely crushed. It requires, however, a good supply of refractory material and demands a higher degree of technical skill than the former process."

Thus in the early reduction of tin ores the use of the shaft furnaces was the original process, and even at the present time it is still used very extensively in the tin districts of the far east. In Cornwall the reverberatory furnaces are used and coal is the fuel, and they are capable of treating the finely crushed and more impure ores that are now being obtained. Whichever method is used, it is necessary to clean the slags which contain tin, both mechanically mixed and chemically combined in the form of silicates. The metallic tin in the slag can readily be separated either by fusing the slag and allowing the molten tin to separate out from the slag, or on account of the high specific gravity of the tin, it can be readily separated by crushing and washing the slag.

#### REFINING THE CRUDE TIN.

The tin that is first obtained has to be refined, and there are two different methods which are being employed at the present time, known as (1) "liquation" and (2) as boiling or "tossing." Mr. Louis\* describes these processes as follows:

"In liquation advantage is taken of the low melting point of tin; impure tin is heated on the incline bed of a furnace to a temperature but little above the melting point of tin; comparatively pure tin trickles down and is received in a large basin or 'float,' in which it is kept in a molten state. The residue on the bed of the furnace consists of the difficultly fusible alloy of tin and iron, known as 'hard head,' which generally contains sulphur, arsenic, copper, and other impurities. Liquation will obviously not remove readily fusible impurities, such as lead and bismuth, and the tin is purified from these by boiling or 'tossing.' The former operation consists in thrusting a billet of wood—apple-wood or cherry-wood being preferred—below the surface of the molten tin in the float; steam is evolved, together with permanent gases produced by the destructive distillation of the

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\*Ibid.

wood, and their escape throws the tin into violent agitation, projecting portions that splash back into the float, so that a large surface of tin in the molten state is exposed to the oxidizing action of the atmosphere. In tossing, the same result is attained by taking out the molten tin by ladlefuls and pouring it back into the float from a height of 2 or 3 feet. By either method oxidation is promoted and the impurities in the tin, together with a certain quantity of the tin itself, are oxidized and form a pulverulent scum on the surface of the float, whence they can be skimmed off from time to time. The metal is allowed to stand for some hours before it is finally ladled out and cast into molds, so that the impure metal may settle down to the bottom of the float, tin being, as already stated, specifically lighter than most of the impurities that are apt to impair its valuable quantities."

#### THE METAL TIN.

Tin is a rather heavy metal of a pure white to slightly bluish color, having a specific gravity of 7.29 to 7.3; though the ordinary commercial tin is 7.5, being due to the impurities it contains, which are in most cases of metals that are heavier than the tin. It is nearly permanent in the air, being affected but very little by exposure to the air, even in the presence of moisture at ordinary temperatures. When heated in the air at a rather low temperature it is gradually converted into the stannic oxide, which is of a yellow-white color and is known as putty powder. When heated to a temperature of between 1,600 to 1,800° C., if exposed to the air, it burns with a white flame. If, however, it is heated to this same temperature out of contact with the air the metal boils. The metal point of tin is variously given as from 227° to 233° C. In this condition it forms a very mobile fluid. Tin is a very highly malleable metal, less ductile, its tensile strength being low. The usual impurities found in commercial tin are iron, arsenic, sulphur, antimony, bismuth, and copper, the effect of most of these being to diminish the ductility of the tin. They also cause the metal to have a duller lustre and grayer color. It alloys readily with many of the other metals, and considerable use is made of this property of tin in the arts. The readiness with which tin alloys with iron affects to some extent the extraction of the tin from its ores. Such alloys of tin and iron are obtained in the beds of the furnace

during the smelting operations and is known as "hard head," consisting of a dark gray, irregularly granular crystalline mass, which is brittle and consists of more or less metallic tin intermingled with definite alloys of tin and iron.

#### USES OF TIN.

The value of tin in the arts was recognized long before the beginning of the Christian Era,\* and it is believed that 450 years before Christ, Herodotus alludes to the tin Islands of Brittany, from which the tin was obtained. The Phœnicians and Greeks also traded with Cornwall in the purchase of tin. There have been many and various uses devised for tin, of which the greatest is in the manufacture of tin plate. There has been an enormous increase during the past few years in the use of tin for this purpose. The tin plate manufacture consists of the coating or tinning of the other metals, especially iron, thus making what is commonly known as sheet or plate tin, used for roofing, tin-ware, boxes, canning, etc. This use of tin has been handed down from the time of the Romans, who used copper vessels coated with tin, though not commonly, and, as stated by Pliny, these tin articles could scarcely be distinguished from the silver ones, and, as far as we can learn, they used in their manufacture practically the same process that is being employed at the present time, namely, of immersing the copper vessel in a pot of molten tin. This metal is also used in the silvering of mirrors, which is accomplished by covering glass with an amalgam of tin and mercury. Tin foil also calls for considerable tin, but at the present time a great deal of the tin foil on the market consists of plates of lead coated with tin, which have been rolled out to the required thinness. Solder, which is used so extensively, is an alloy of tin and lead, but often containing a small percentage of antimony. There are a number of alloys of tin with copper, the two principal ones being bell metal, which contains from 65 to 80 per cent. copper and 20 to 35 per cent. tin, with a small fraction of a per cent. of antimony, and bronze, which contains 93 per cent. of copper and 10 per cent. of tin.

Tin oxide is also made from metallic tin, which, on account of its hardness, is employed as a polishing powder, and is used, especially

\* J. D. Dana, *Manual of Min. and Lithology*, 3rd Edition, 1880, p. 161.

of a paste, for sharpening fine cutting instruments. This is also used to some extent in the preparation of enamels. The oxides of tin (stannic and stannous chloride) are used in the preparation of many colors and also as mordants in dyeing. The bisulphide of tin, which has a golden lustre, is used for ornamental paint-

## VALUE OF TIN.

There is considerable fluctuation in the value of tin, owing to the scarcity of the supply and to the fact that the operators of the mines in the Malay Peninsula are beginning to realize their power to control to some extent at least, the market, and have, therefore, been raising the price of their ore.

The variation in the value of tin per pound is shown in the following table, which gives the average value for each month in 1902 and 1903:

MONTHLY AVERAGE PRICES OF TIN IN NEW YORK.\*

MONTH.	PRICE PER POUND.	
	1902.	1903.
	CENTS.	CENTS.
January .....	23.54	28.33
February .....	24.07	29.43
March .....	26.32	30.15
April .....	27.77	29.81
May .....	29.85	29.51
June .....	29.36	28.34
July .....	28.38	27.68
August .....	28.23	28.29
September .....	26.60	26.77
October .....	26.07	25.92
November .....	25.68	25.42
December .....	25.68	27.41
Year .....	26.79	28.09

\* Eng. and Min. Jour., Jan. 7, 1904, p. 19.

Seen from the above table, there was an increase of about one quarter cents per pound in the average price for the year 1903 over that of 1902.

**PRODUCTION OF TIN.****PRODUCTION OF TIN FROM THE CAROLINAS.**

The first production of tin ore from the Carolina belt was during the summer and fall of 1903, and was from the Ross mine, the shipment consisting of 38,471 pounds of tin concentrates, which were sent to England for treatment. There has also been a small production at the Jones mine during the development work, but none of this has as yet been shipped.

**WORLD'S PRODUCTION OF TIN.**

At the present time none of the tin used in the United States is produced in this country, but it is all obtained from foreign sources. The fact that about 43 per cent. of the world's production of tin is consumed in the United States emphasizes the importance of discovering a source of supply of this metal that can be controlled by this country. It is hard to obtain accurate figures regarding the total production of tin in the world, for the reason that in some countries there is little or none exported, and no reliable statistics are collected in these countries of their mineral production. For instance, in China there is at the present time practically no exportation of tin, although occasionally exports have been made of Yunnan tin. The production of tin in China has been variously estimated, and has been put as high as 20,000 tons per annum; but, while these figures are undoubtedly too high, no closer figure can be given which would accurately represent the production. There is also a certain quantity of tin produced each year in Mexico, a very small part of which is exported to the United States; but as no accurate record is kept of the quantity obtained, the total can only be approximately represented in the world's total production. Then again, the statistics regarding the Bolivian production of tin that is used in that country are difficult to obtain, although accurate statistics are available of the quantity exported. In the following table there is given an approximate idea of the production of tin by countries during the past seven years, which shows the growth of the tin industry as well as the yearly production of each of these countries:

PRODUCTION OF TIN IN THE WORLD (LONG TONS).<sup>a</sup>

COUNTRY.	1897.	1898.	1899.	1900.	1901.	1902.	1903.
United States.....	44,914	45,901	45,944	47,855	52,989	53,756	54,797
Banka and Billiton.....	14,800	14,380	14,123	16,640	19,365	18,765	20,060
Malaya.....	5,506	4,464	4,753	6,937	9,670	10,150	9,500
Walls, England.....	4,453	4,648	4,013	4,268	4,125	3,950	4,150
Bolivia.....	3,466	2,420	3,337	3,178	3,276	3,206	4,991
Miscellaneous†.....	360	655	970	760	450	350	395
Total†.....	73,499	72,468	73,140	79,638	89,875	90,177	93,893

<sup>a</sup>Mineral Industry 1902, p. 586; Eng. and Min. Jour., Jan. 7, 1904, p. 18.

Includes production in Austria, Germany, Japan, Mexico; and in 1903 from South Carolina. This does not include the production of China.

As is seen from the above table, there has been an increase in the amount of tin produced each year, but this is still short of the demand for this metal, as indicated by the great decrease in the stocks of tin that have been kept on hand in the various countries. The production of the Malay Peninsula, the largest producers, has increased about 22 per cent. during the past 7 years; while that of the islands of Banka and Billiton, the second largest producers, has increased about 35 per cent.; and Bolivia, the third largest producer, increased its production about 84 per cent. England's production has declined slightly, and the Australian production, which is small, has increased about 44 per cent.

The production of tin during 1903 was consumed approximately as follows: 43 per cent. by the United States; 28 per cent. by Great Britain; 22 per cent. by other European countries; and 7 per cent. by India and China. This, of course, does not include the small proportions used in Mexico, Japan, Bolivia, etc.

## IMPORTS OF TIN INTO THE UNITED STATES.

The tin consumed in the United States for the year ending June 1903, was obtained, according to the report of the Bureau of Statistics, from the countries named in the following table, which gives the quantity and value obtained from each:

**IMPORTS OF TIN INTO THE UNITED STATES FOR  
THE YEAR ENDING JUNE 30, 1903.**

COUNTRY.	TIN IN BARS, BLOCKS, PIGS, GRAIN OR GRANULATED.	
	Quantity. Short Tons.	Value.
Malay Peninsula .....	23, 592	\$12, 715, 875
England .....	17, 591	9, 374, 563
Netherlands .....	1, 726	944, 304
Other European Countries .....	853	441, 114
Australia .....	224	119, 851
Japan† .....	42 ½	23, 095
Total .....	44, 028 ½	\$23, 618, 802

†Includes a very small amount from China and Mexico.

It will be noticed in the above table that the amount quoted as having been imported from Great Britain is nearly four times that produced in England. This is due to the fact that a considerable portion of the tin produced in the Malay Peninsula is shipped to Great Britain from Singapore, and is in turn imported from there into the United States. Thus it will be seen that the greater part of the tin consumed in the United States is mined in the Malay Peninsula. That imported from the Netherlands represents tin that was obtained from the Islands of Banka and Billiton. Some of the tin imported from other European countries was obtained from Bolivia.

**SOURCES OF SUPPLY OF TIN.**

The main source of supply of tin is from the Malay States, which furnish over one-half of the total amount consumed in the world. To increase this supply to any great extent is almost out of the question, at least for the present, on account of the necessity of making such decided changes in the method of mining, which is well-nigh impossible, as most of this mining is in the hands of the Chinese. The same is true of the Islands of Banka and Billiton, which produce one-fifth of all the tin used in the world. The deposits in the Chinese Empire are in so remote a part of the country that little is known

extent or of their yearly production; but it is, however, at present time practically all consumed in China. The Bolivian which now furnish about one-tenth of the world's supply of tin, have been constantly increasing their production during the past years, and during this time they have nearly doubled their output. On the other hand, the production from Tasmania and New Guinea has been decreasing.

Although there has been an increase in the total amount of tin produced each year, it does not equal the demand, as shown in the table given below.

In order to illustrate the increase in the demand for this metal, which is not supplied by the yearly production, there is given in the following table the accumulated stocks of tin that were on hand at the end of each of the past seven years:

STOCKS OF TIN IN ENGLAND, AMERICA AND HOLLAND  
(LONG TONS).<sup>a</sup>

ON HAND DECEMBER 31.	1896.	1897.	1898.	1899.	1900.	1901.	1902.
Foreign in London .....	18,097	15,146	8,110	5,486	4,286	5,114	4,557
Residing in London .....	1,174	673	165	1,212	1,297	689	712
Insula afloat for London, including wire advices. ....	2,792	2,500	1,050	2,900	3,835	2,780	2,845
Insula afloat for London, in wire advices .....	525	600	400	450	350	522	518
Warrants in Holland .....	1,616	2,877	2,228	1,160	837	696	644
Holland .....	1,638	1,328	1,036	470	330	329	60
Insula afloat for Holland .....	1,742	1,193	1,322	1,050	350	440	333
Insula stock in Holland .....	789	377	454	100	60	30	-----
Insula afloat for Holland .....	950	100	215	-----	-----	-----	-----
Insula afloat for Continental .....	650	600	560	450	590	873	650
At Liverpool .....	250	710	300	550	495	846	184
Total stocks .....	30,223	26,104	15,840	13,828	12,430	12,319	10,503
Stock in America and floating .....	3,925	4,500	4,300	2,500	2,600	6,050	4,450
Grand totals .....	34,148	30,604	20,140	16,328	15,030	18,369	14,953
Producers' reserves of unsold stock in Holland .....	5,953	4,333	3,213	4,353	5,347	7,251	1,466

<sup>a</sup> The annual metal circulars of William Sargent & Co., A. Strauss & Co., and Min. Industry, p. 587.



As is seen from the above table, there was only one year, 1901, that showed any increase in the accumulated stock of tin at the end of the year over that of the previous year. This was an increase of 3,339 tons of tin in the accumulated stock, but at the end of 1902 the stock on hand had decreased to 14,953 tons of accumulated tin, and at the end of 1903 it was still lower. The accumulated stocks of tin in the United States, which had ranged from about 3,500 to 7,200 tons during the years 1896 to 1901 were reduced during 1902 to less than 1,500 tons.

These figures illustrate emphatically the need of new sources of supply of tin, and why new deposits like those in the Carolinas and Alaska should be thoroughly investigated.

One result of this scarcity in the supply of tin and consequently the high valuation of this metal has been the utilization of old tin cans and other scrap tin as a source of the metal. The amount of tin that is recovered each year in this way, while not large, is steadily increasing, and it is becoming an industry of some considerable importance. There are now a number of companies that have been organized for this purpose, of which the more important ones are the Vulcan Detinning Company, whose plants are at Sewaren, N. J., and Streator, Ill.; the Ammonia Company of Philadelphia, and the Johnson & Jennings Company of Cleveland and Chicago. In recovering the tin from the scrap, this latter is digested in an alkaline solution and the tin electrolytically precipitated therefrom in the form of a powder, which averages 80 per cent. metal.\* The sheet iron that remains, which contains a little tin, is melted and cast into window-sash weights and other objects where the small percentage of tin in the iron is a desirable feature.

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\* Min. Ind., 1902, p. 585.

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JOSEPH HYDE BRATT, STATE GEOLOGIST

BULLETIN No. 20

# WATER-POWERS OF NORTH CAROLINA

(A SUPPLEMENT TO BULLETIN No. 9)

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**NORTH CAROLINA GEOLOGICAL AND ECONOMIC SURVEY**

**JOSEPH HYDE PRATT, STATE GEOLOGIST**

**BULLETIN No. 20**

**WATER-POWERS OF NORTH CAROLINA**

**(A SUPPLEMENT TO BULLETIN No. 8)**

**PREPARED BY THE**

**HYDROGRAPHIC DIVISION OF THE U. S. GEOLOGICAL SURVEY**



**RALEIGH**

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## LETTER OF TRANSMITTAL.

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CHAPEL HILL, N. C., August 1, 1910.

*To His Excellency, HON. W. W. KITCHIN,  
Governor of North Carolina.*

SIR:—Since the publication of Bulletin No. 8 on the Water-powers of North Carolina, in 1898, a great deal of data and information regarding these water-powers have been collected by the United States Geological Survey in co-operation with the State Survey, and a manuscript has been prepared for the State by the Hydrographic Division of the Federal Survey, of this information, which we believe will be of very great value and assistance to those interested in the development of the water-powers of the State. This manuscript I have the honor to submit for publication as Bulletin No. 20 of the North Carolina Geological and Economic Survey series.

Yours respectfully,

JOSEPH HYDE PRATT,  
*State Geologist.*





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## PREFACE.

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Of all the natural resources of North Carolina, there are perhaps none of so much value to the State in connection with her industrial development as her water-powers. The value of these water-powers cannot be overestimated, and this refers not only to the larger streams capable of developing from 10,000 to 40,000 H. P., but particularly to the great number of small water-powers capable of developing from a few to several hundred horse-power. These latter are to be found on many of the small streams in all parts of the central and western portions of the State and are sufficient for the requirements of some local industry. Their development does not require a very large outlay of capital, so that they are usually within the reach of the individual or a company of moderate means. In many instances their development and utilization will mean that many small manufacturing plants can be established throughout the State whose operations are independent of fuel and whose establishment would be impossible if they were dependent upon coal to develop their power.

Many of these water-powers in the State, which formerly could not be utilized on account of their location, can now be developed and used to advantage by installing at the water-power an electric plant and transmitting electric power to the point of consumption. There are many towns in North Carolina that are now without electric lights or power which could, at comparatively small expense, obtain the same by the development of water-powers that are sufficiently large for the purpose and located close to the town.

Of all the Southern States, North Carolina stands perhaps first in the number and magnitude of her available water-powers, and, when all factors regarding the development and utilization of these water-powers are considered, there is perhaps no State in the Union equal to North Carolina in this respect.

In 1898 Bulletin No. 8 on the Water-powers of North Carolina was published by the Geological Survey, which gave detailed descriptions of the physiographic features of the State; the drainage areas; the geological distribution of the water-powers; and the different causes that affect the flow of streams. Since that time the State Survey, in co-operation with the United States Geological Survey, has maintained from 20 to 30 gaging stations on the principal rivers and streams in the

State, at which daily measurements have been made of the height of the river surfaces, and occasional measurements have been made of the flow and volume of water. In this way a large amount of new information has been collected relating to the flow of the principal streams and many of the smaller streams and tributaries, so that it has been possible to prepare tables giving the amount of available water that a stream will carry and how much this can be increased by storage and reservoirs. The value of the present publication will be found chiefly in the fact that it will present the results of careful scientific investigations carried on through a term of years, so that the results given regarding the available power at all seasons of the year, which have been computed from the known fall of the amount of water in the stream at that point, can be relied upon as accurate.

The manuscript for this bulletin has been prepared in the office of the Hydrographic Division of the United States Geological Survey, under the general supervision of Mr. M. O. Leighton, Chief Hydrographer, and Mr. M. R. Hall, Hydrographer for the South Atlantic States, and the State Geologist desires to express his appreciation and sincere thanks to the members of the United States Geological Survey for their courtesy in preparing it.

JOSEPH HYDE PRATT,  
*State Geologist.*



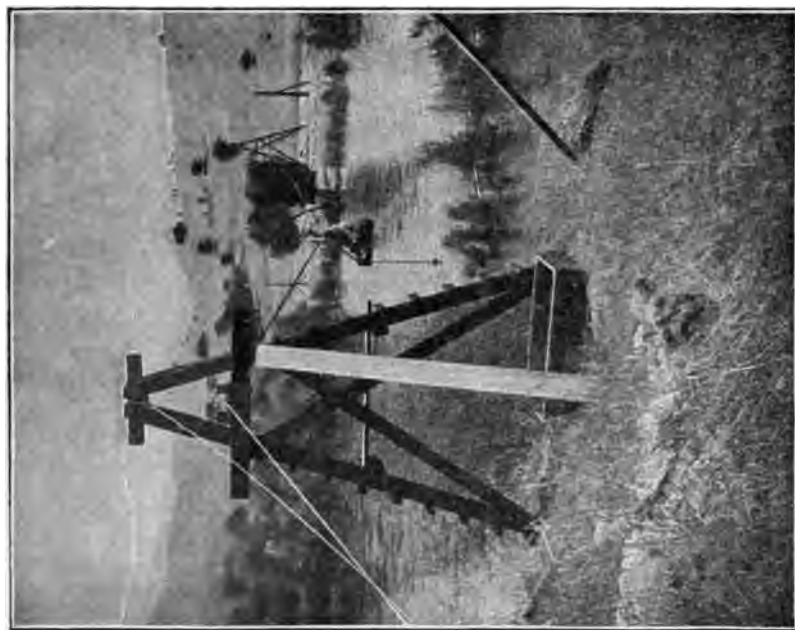


FIG. 1a. A TYPICAL CABLE STATION.



FIG. 1b.

MEASURING VELOCITY OF STREAMS WITH CURRENT METERS.

# WATER-POWERS OF NORTH CAROLINA.

A CO-OPERATIVE REPORT BY THE UNITED STATES GEOLOGICAL SURVEY.

GEORGE OTIS SMITH, Director,

AND THE NORTH CAROLINA GEOLOGICAL AND ECONOMIC SURVEY.

JOSEPH HYDE PRATT, State Geologist.

## INTRODUCTION.

It is the purpose of this publication to present in a single volume the large amount of data relating to the flow and power of North Carolina streams, resulting from the work of the water resources branch of the United States Geological Survey, which was begun in the year 1895. A portion of these results were published in 1898 in Bulletin No. 8 on the Water-powers of North Carolina, together with descriptions of the larger water-powers and their locations. These data consist essentially of gage heights and discharge measurements that can be used to show the continuous daily flow of the streams, added to which are certain river profiles, in the form of tabulated elevation of the water surface at points along the river, that can be used to estimate the available fall at any place. The amount of water flowing in the stream and the fall which can be used will determine the amount of power which can be developed. A quick formula to use is as follows:

$$\frac{\text{Flow in sec.-ft.} \times \text{fall in feet}}{11} = \text{net horse-power on water wheel, realizing 80 per cent of the theoretical power.}$$

## ORGANIZATION AND SCOPE OF WORK.

The hydrographic work of the United States Geological Survey includes the collection of facts concerning and the study of conditions affecting the behavior of water from the time it reaches the earth as rain or snow until it joins the oceans or great navigable rivers.

The chief features of the hydrographic work are the collection of data relating to the flow of the surface waters and the study of the conditions affecting this flow. There is also collected information concerning river profiles, duration and magnitude of floods, water-power, etc., which may be of use in hydrographic studies. This work includes the study of the hydrography of every important river basin, and is of direct value in the commercial and agricultural development of the country.

In order to collect the material from which estimates of daily flow are made, gaging stations are established. The selection of a site for a gaging station and the length of time it is maintained depend largely upon the physical features and the needs of each locality. If the water is to be used for power, special effort is made to obtain information concerning the minimum flow; if water is to be stored, the maximum flow receives special attention. In all sections of the country permanent stations are maintained for general statistical purposes, to show the condi-



tions existing through long periods. They are also used as primary stations, and, in connection with short series of measurements, serve as a basis for estimating the flow at other points in the drainage basin.

#### DEFINITIONS.

The volume of water flowing in a stream, the "run-off" or "discharge," is expressed in various terms, each of which has become associated with a certain class of work. These terms may be divided into two groups: (1) Those which represent a rate of flow, as second-feet, gallons per minute, miner's inch, and run-off in second-feet per square mile; and (2) those which represent the actual quantity of water, as run-off in depth in inches and acre-foot. They may be defined as follows:

"Second-foot" is an abbreviation for cubic foot per second, and is the quantity of water flowing in a stream one foot wide, one foot deep, at a rate of one foot per second. It is generally used as a fundamental unit from which others are computed.

"Gallons per minute" is generally used in connection with pumping and city water supply.

The "miner's inch" is the quantity of water that passes through an orifice one inch square under a head which varies locally. It has been commonly used by miners and irrigators throughout the West, and is defined by statute in each State in which it is used. In most States the California miner's inch is used, which is the fiftieth part of a second-foot.

"Second-feet per square mile" is the average number of cubic feet of water flowing per second from each square mile of area drained, on the assumption that the run-off is distributed uniformly, both as regards time and area.

"Run-off in inches" is the depth to which the drainage area would be covered if all the water flowing from it in a given period were conserved and uniformly distributed on the surface. It is used for comparing run-off with rainfall, which is usually expressed in depth in inches.

"Acre-foot" is equivalent to 43,560 cubic feet, and is the quantity required to cover an acre to the depth of one foot. It is commonly used in connection with storage for irrigation work. There is a convenient relation between the second-foot and the acre-foot. One second-foot flowing for twenty-four hours will deliver 86,400 cubic feet or approximately two acre-feet.

#### EXPLANATION OF TABLES.

For each regular gaging station are given, as far as available, the following data:

1. Description of station.
2. List of discharge measurements.
3. Gage-height table.
4. Rating table.
5. Table of estimated monthly and yearly discharges and run-off, based upon all the facts obtained to date.

The descriptions of stations give such general information about the locality and equipment as would enable the reader to find and use the station, and they also give, as far as possible, a complete history of all the changes that have occurred since the establishment of the station that would be factors in using the data collected.

The discharge-measurement table gives the results of the discharge measurements made during the year, including the date, the name of the hydrographer, the area of cross section, the mean velocity, the gage height, and the discharge in second-feet.

The table of daily gage heights gives the daily fluctuations of the surface of the river as found from the mean of the gage readings taken each day. The gage height given in the table represents the elevation of the surface of the water above the zero of the gage. At most stations the gage is read in the morning and in the evening.

The rating table gives discharges in second-feet corresponding to each stage of the river as given by the gage heights.

In the table of estimated monthly discharge, the column headed "Maximum" gives the mean flow for the day when the mean gage height was highest, and it is the flow as given in the rating table for that mean gage height. As the gage height is the mean for the day, there might have been short periods when the water was higher and the corresponding discharge larger than given in this column. Likewise in the column of "Minimum" the quantity given is the mean flow for the day when the mean gage height was lowest. The column headed "Mean" is the average flow for each second during the month. Upon this the computations for the two remaining columns, which are defined on page 9, are based.

In the computations for the tables of this report the following general and special rules have been used:

#### FUNDAMENTAL RULES FOR COMPUTATION.

1. The highest degree of precision consistent with the rational use of time and money is imperative.
2. All items of computation should be expressed by at least two and not more than four significant figures.
3. Any measurement in a vertical velocity, mean velocity, or discharge curve whose per cent of error is 5 times the average per cent of error of all the other measurements should be rejected.
4. In reducing the number of significant figures, or the number of decimal places, by dropping the last figure, the following rules apply:
  - (a) When the figure in the place to be rejected is less than 5, drop it out without changing the preceding figure. Example: 1,827.4 becomes 1,827.
  - (b) When the figure in the place to be rejected is greater than 5, drop it and increase the preceding figure by 1. Example: 1,827.6 becomes 1,828.
  - (c) When the figure in the place to be rejected is 5, and it is preceded by an even figure, drop the five. Example: 1,828.5 becomes 1,828.

(d) When the figure in the place to be rejected is 5, and it is preceded by an odd figure, drop the 5 and increase the preceding figure by 1. Example: 1,827.5 becomes 1,828.

#### SPECIAL RULES FOR COMPUTATION.

1. Rating tables are to be constructed as close as the data upon which they are based will warrant. No decimals are to be used when the discharge is over 50 second-feet.

2. Daily discharges shall be applied directly to the gage heights as they are tabulated.

3. Monthly means are to be carried out to one decimal place when the quantities are below 100 second-feet. Between 100 and 10,000 second-feet the last figure in the monthly mean shall be a significant figure. This also applies to the yearly mean.

4. Second-feet per square mile and depth in inches for the individual months shall be carried out to at least three significant figures, except in the case of the decimals where the first significant figure is preceded by one or more naughts (0), when the quantity shall be carried out to two significant figures. Example: 1.25; 0.125; 0.012; 0.0012. The yearly means for the quantities are always to be expressed in three significant figures and at least two decimal places.

#### CONVENIENT EQUIVALENTS.

- 1 second-foot equals 50 California miner's inches.
- 1 second-foot equals 38.4 Colorado miner's inches.
- 1 second-foot equals 40 Arizona miner's inches.
- 1 second-foot equals 7.48 United States gallons per second; equals 448.8 gallons per minute; equals 646,272 gallons for one day.
- 1 second-foot equals 6.23 British Imperial gallons per second.
- 1 second-foot for one year covers 1 square mile 1.131 feet deep, 13,572 inches deep.
- 1 second-foot for one year equals 0.000214 cubic mile; equals 31,536,000 cubic feet.
- 1 second-foot equals about 1 acre-inch per hour.
- 1 second-foot falling 10 feet equals 1.136 horse-power.
- 100 California miner's inches equals 15 United States gallons per second.
- 100 California miner's inches equals 77 Colorado miner's inches.
- 100 California miner's inches for one day equals 4 acre-feet.
- 100 Colorado miner's inches equals 2.60 second-feet.
- 100 Colorado miner's inches equals 19.5 United States gallons per second.
- 100 Colorado miner's inches equals 130 California miner's inches.
- 100 Colorado miner's inches for one day equals 5.2 acre-feet.
- 100 United States gallons per minute equals 0.223 second-foot.
- 100 United States gallons per minute for one day equals 0.44 acre-feet.
- 1 million United States gallons per day equals 1.55 second-foot.
- 1 million United States gallons equals 3.07 acre-feet.
- 1 million cubic feet equals 22.95 acre-feet.
- 1 acre-foot equals 325,850 gallons.
- 1 inch deep on 1 square mile equals 2,323,200 cubic feet.
- 1 inch deep on 1 square mile equals 0.0737 second-foot per year.

- 1 inch equals 2.54 centimeters.
- 1 foot equals 0.3048 meter.
- 1 yard equals 0.9144 meter.
- 1 mile equals 1.60935 kilometers.
- 1 mile equals 1,760 yards; equals 5,280 feet; equals 63,360 inches.
- 1 square yard equals 0.836 square meter.
- 1 acre equals 0.4047 hectare.
- 1 acre equals 43,560 square feet; equals 4,840 square yards.
- 1 acre equals 209 feet square, nearly.
- 1 square mile equals 259 hectares.
- 1 square mile equals 2.59 square kilometers.
- 1 cubic foot equals 0.0283 cubic meter.
- 1 cubic foot equals 7.48 gallons; equals 0.804 bushel.
- 1 cubic foot of water weighs 62.5 pounds.
- 1 cubic yard equals 0.7646 cubic meter.
- 1 cubic mile equals 147,198,000,000 cubic feet.
- 1 cubic mile equals 4,667 second-feet for one year.
- 1 gallon equals 3.7854 liters.
- 1 gallon equals 8.36 pounds of water.
- 1 gallon equals 231 cubic inches (liquid measure).
- 1 pound equals 0.4536 kilogram.
- 1 avoirdupois pound equals 7,000 grains.
- 1 troy pound equals 5,760 grams.
- 1 meter equals 39.37 inches. Log. 1.5951654.
- 1 meter equals 3.280833 feet. Log. 0.5159842.
- 1 meter equals 1.093611 yards. Log. 0.0388629.
- 1 kilometer equals 3,281 feet; equals five-eighths mile, nearly.
- 1 square meter equals 10,764 square feet; equals 1,196 square yards.
- 1 hectare equals 2.471 acres.
- 1 cubic meter equals 35.314 cubic feet; equals 1.308 cubic yards.
- 1 liter equals 1.0567 quarts.
- 1 gram equals 15.43 grains.
- 1 kilogram equals 2.2046 pounds.
- 1 tonneau equals 2,204.6 pounds.
- 1 foot per second equals 1.097 kilometers per hour.
- 1 foot per second equals 0.68 mile per hour.
- 1 cubic meter per minute equals 0.5886 second-foot.
- 1 atmosphere equals 15 pounds per square inch; 1 ton per square foot; 1 kilogram per square centimeter.
- Acceleration of gravity equals 32.16 feet per second every second.
- 1 horse-power equals 550 foot-pounds per second.
- 1 horse-power equals 76 kilogram-meters per second.
- 1 horse-power equals 746 watts.
- 1 horse-power equals 1 second-foot falling 8.8 feet.
- 1½ horse-power equal about 1 kilowatt.

#### FIELD METHODS OF MEASURING STREAM FLOW.

*Velocity method.*—The determination of the quantity of water flowing past a certain section of a stream at a given time is termed a discharge measurement. This quantity is the product of two factors—the mean velocity and the area of the cross section. The mean velocity is a function of surface slope, wetted perimeter, roughness of bed, and the

channel conditions at, above, and below the gaging section. The area depends upon the contour of the bed and the fluctuations of the surface. The two principal ways of measuring the velocity of a stream are by floats and current meters.

Great care is taken in the selection and equipment of gaging stations for determining discharge by velocity measurements in order that the data may have the required degree of accuracy. Their essential requirements are practically the same whether the velocity is determined by meters or floats. They are located as far as possible where the channel is straight both above and below the gaging section; where there are no cross currents, back-water or boils; where the bed of the stream is reasonably free from large projections of a permanent character; and where the banks are high and subject to overflow only at flood stages. The station must be so far removed from the effects of tributary streams and dams or other artificial obstructions that the gage height shall be an index of the discharge.

There are generally pertinent to a gaging station certain permanent or semipermanent structures which are usually referred to as equipment. These are a gage for determining the fluctuations of the water surface, bench marks to which the datum of the gage is referred, permanent marks on a bridge or a tagged line indicating the points of measurement, and where the current is swift, some appliance (generally a secondary cable) to hold the meter in position in the water. As a rule, the stations are located at bridges if the channel conditions are satisfactory, as from them the observations can more readily be made and the cost of the equipment is small.

In measuring velocity by a float, observation is made of the time taken by the float to pass over the "run," a selected stretch of river from 50 to 200 feet long. In each discharged measurement a large number of velocity determinations are made at different points across the stream, and from these observations the mean velocity for the whole section is determined. This may be done by platting the mean positions of the floats as indicated by the distances from the bank as ordinates and the corresponding times as abscissas. A curve through these points shows the mean time of run at any point across the stream, and the mean time for the whole stream is obtained by dividing the area bounded by this curve and its axis by the width. The length of the run divided by the mean time gives the mean velocity.

The area used in float measurements is the mean of the areas at the two ends of the run and at several intermediate sections.

The essential parts of the current meters in use are a wheel of some type, so constructed that the impact of flowing water causes it to revolve, and a device for recording or indicating the number of revolutions. The relation between the velocity of the moving water and the revolutions of the wheel is determined for each meter. This rating is done by drawing the meter through still water for a given distance at different speeds, and noting the number of revolutions for each run. From these data a rating table is prepared which gives the velocity per second for any number of revolutions.

Many kinds of current meters have been constructed. They may, however, be classed in two general types: Those in which the wheel is made up of a series of cups, as the Price, and those having a screw propeller wheel, as the Haskell. Each meter has been developed for use under some special condition. In the case of the small Price meter, which has been largely developed and has been extensively used by the United States Geological Survey, an attempt has been made to get an instrument which could be used under practically all conditions.

Current-meter measurements may be made from a bridge, a cable, a boat, or by wading, and gaging stations may be classified in accordance with such use. Fig. 1 shows a typical cable station.

In making the measurements an arbitrary number of points are laid off on a line perpendicular to the thread of the stream. The points at which the velocity and depth are observed are known as measuring points, and are usually fixed at regular intervals, varying from 2 to 20 feet, depending upon the size and condition of the stream. Perpendiculars dropped from the measuring points divide the gaging section into strips. For each strip or pair of strips the mean velocity, area, and discharge are determined independently, so that conditions existing in one part of the stream may not be extended to parts where they do not apply.

There are in general use three classes of methods of measuring velocity with current meters: multiple-point, single-point, and integration.

The three principal multiple-point methods in general use are the vertical velocity-curve; 0.2 and 0.8 depth; and top, bottom, and mid-depth.

In the vertical velocity-curve method a series of velocity determinations are made in each vertical at regular intervals, usually from 0.5 to 1 foot apart. By plating these velocities as abscissas and their depths as ordinates, and drawing a smooth curve among the resulting points, the vertical velocity-curve is developed. This curve shows graphically the magnitude and changes in velocity from the surface to the bottom of the stream. The mean velocity in the vertical is then obtained by dividing the area bounded by this velocity-curve and its axis by the depth. On account of the length of time required to make a complete measurement by this method, its use is limited to the determination of coefficients for purposes of comparison and measurements under ice.

In the second multiple-point method the meter is held successively at 0.2 and 0.8 of the depth and the mean of the velocities at these two points is taken as the mean velocity for that vertical. Assuming that the vertical velocity-curve is a common parabola with horizontal axis, the mean of the velocities at 0.22 and 0.79 of the depth will give (closely) the mean velocity in the vertical. Actual observations under a wide range of conditions show that this second multiple-point method gives the mean velocity very closely for open-water conditions where the depth is over 5 feet and the bed comparatively smooth, and moreover the indications are that it will hold nearly as well for ice-covered rivers.

The single-point method consists in holding the meter either at the depth of the thread of mean velocity, or at an arbitrary depth for which the coefficient for reducing to mean velocity has been determined.

Extensive experiments by vertical velocity-curves show that the thread of mean velocity generally occurs at from 0.5 to 0.7 of the total depth. In general practice the thread of mean velocity is considered to be at 0.6 depth, at which point the meter is held in a majority of the measurements. A large number of vertical velocity-curve measurements taken on many streams and under varying conditions show that the average coefficient for reducing the velocity obtained at 0.6 depth to mean velocity is practically unity.

In the other principal single-point method the meter is held near the surface, usually 1 foot below, or low enough to be out of the effect of the wind or other disturbing influences. This is known as the subsurface method. The coefficient for reducing the velocity taken at the subsurface to the mean has been found to be from 0.85 to 0.95, depending upon the stage, velocity and channel conditions. The higher the stage the larger the coefficient. This method is specially adapted for flood measurements, or when the velocity is so great that the meter cannot be kept at 0.6 depth.

The area, which is the other factor in the velocity method of determining the discharge of a stream, depends on the stage of the river, which is observed on the gage, and on the general contour of the bed of the stream, which is determined by soundings. The soundings are usually taken at each measuring point at the time of the discharge measurement, either by using the meter and cable, or by a special sounding line or rod. For streams with permanent beds standard cross sections are usually taken during low water. These sections serve to check the soundings which are taken at the time of the measurements, and from them any change which may have taken place in the bed of the stream can be detected. They are also of value in obtaining the area for use in computations of high-water measurements, as accurate soundings are hard to obtain at high stages.

In computing the discharge measurements from the observed velocities and depths at various points of measurement, the measuring section is divided into elementary strips, as shown in Fig. 1, and the mean velocity, area, and discharge are determined separately for either a single or a double strip. The total discharge and the area are the sums of those for the various strips, and the mean velocity is obtained by dividing the total discharge by the total area.

#### OFFICE METHODS OF COMPUTING RUN-OFF.

For stations of streams with permanent beds the first step in computing the run-off is the construction of a rating table, which shows the discharge corresponding to any stage of the stream. This rating table is applied to the record of stage to determine the amount of water flowing.

The data necessary for the construction of a rating table for a velocity-area station are the results of the discharge measurements, which include the record of stage of the river at the time of measurement, the area of the cross section, the mean velocity of the current, and the quantity of water flowing, and a thorough knowledge of the conditions at and in the vicinity of the station.

The construction of the rating table depends upon the following laws of flow for open permanent channels: (1) The discharge will remain constant so long as conditions at or near the gaging station remain constant. (2) Neglecting the change of slope due to the rise and fall of the stream, the discharge will be the same whenever the stream is at a given stage. (3) The discharge is a function of and increases gradually with the stage.

The plotting of results of the various discharge measurements, using gage heights as ordinates, and discharge, mean velocity, and area as abscissas, will define curves which show the discharge, mean velocity, and area corresponding to any gage height. For the development of these curves there should be, therefore, a sufficient number of discharge measurements to cover the range of the stage of the stream.

As the discharge is the product of two factors, the area and the mean velocity, any change in either factor will produce a corresponding change in the discharge. Their curves are therefore constructed in order to study each independently of the other.

The area curve can be definitely determined from accurate soundings extending to the limits of high water. It is always concave toward the horizontal axis or on a straight line, unless the banks of the stream are overhanging.

The form of the mean velocity curve depends chiefly upon the surface slope, the roughness of the bed, and the cross section of the stream. Of these the slope is the principal factor. In accordance with the relative changes of these factors the curve may be either a straight line, convex or concave toward either axis, or a combination of the three. From a careful study of the conditions at any gaging station the form which the vertical velocity curve will take can be predicted, and it may be extended with reasonable certainty to stages beyond the limits of actual measurements. Its principal use is in connection with the area curve in locating errors in discharge measurements and in constructing the rating table.

The discharge curve is defined primarily by the measurements of discharge, which are studied and weighted in accordance with the local conditions existing at the time of each measurement. The curve may, however, best be located between and beyond the measurements by means of curves of area and mean velocity. The discharge curve under normal conditions is concave toward the horizontal axis and is generally parabolic in form.

In the preparation of the rating table the discharge for each tenth or half tenth on the gage is taken from the curve. The differences between successive discharges are then taken and adjusted according to the law that they shall either be constant or increasing.

The determination of daily discharge of streams with changeable beds is a difficult problem. In case there is a weir or dam available, a condition which seldom exists on streams of this class, estimates can be obtained by its use. In case of velocity-area stations frequent discharge measurements must be made if the estimates are to be other than rough approximates.



**DRAINAGE BASINS.**

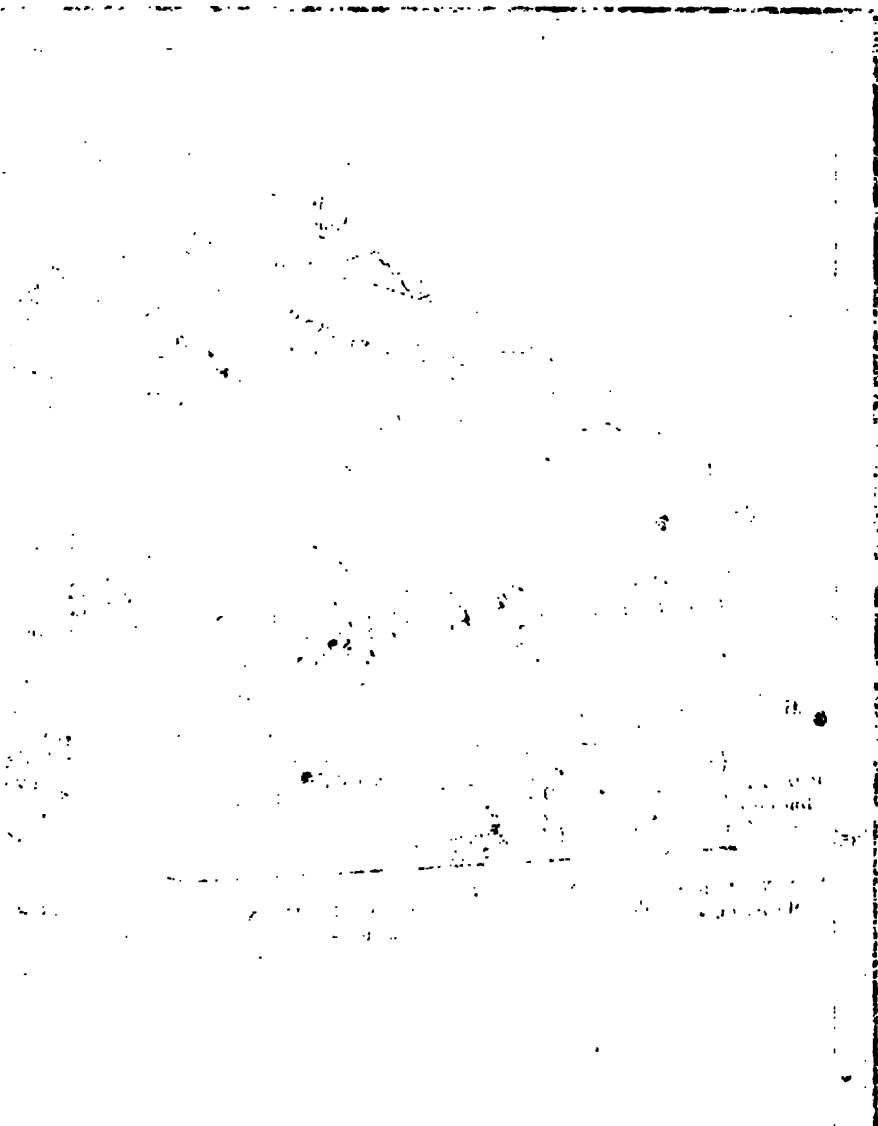
In the following pages there are given descriptions of the drainage basins in which the gaging stations are located. The ones discussed are the drainage basins of the Roanoke, Tar, Neuse, Cape Fear, Yadkin, Santee, Kanawha and Tennessee rivers.

The map, Plate II, shows the location of the gaging stations and also shows, approximately, the location of developed and undeveloped water-powers.

Since the publication of Bulletin 8 a great advance has been made in water-power development, due to the practicability of converting water-power into electric power and transmitting this to the point of consumption. This fact makes possible the development of the large water-powers of North Carolina, such as that of the Southern Power Company, of Charlotte, which has developed a series of water-powers on the Catawba River; of the Whitney Company, which has developed water-power at the narrows of the Yadkin River; and of the Rockingham Power Company, which has developed the water-power at Blenitt Falls on the Pee Dee River.

BULLETIN 20, PLATE II





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## ROANOKE RIVER DRAINAGE BASIN.

## DESCRIPTION OF BASIN.

Dan River joins the Roanoke at Clarksville, Mecklenburg County, Va., 185 miles above its mouth, and is its largest tributary. The Roanoke drains a total area of 9,200 square miles, and empties into Albemarle Sound a short distance below Plymouth, N. C. It is navigable at all stages for 120 miles, to Weldon, N. C., where it crosses the fall line. The Dan and the Roanoke above their junction drain, respectively, 3,798 and 3,546 square miles. The Roanoke is the more northerly of the two, and its drainage basin lies entirely in Virginia. It rises among the eastern foothills of the Blue Ridge, southwest of Roanoke and Salem, and flows at first northeast, then southeast to its junction with the Dan. The Dan rises in Surry County, N. C., and Patrick County, Va., and flows at first southeast, then northeast to its junction with the Roanoke. A large part of the drainage area of the Dan lies in North Carolina.

During 1905 a survey of Roanoke River was made in order to determine a plan and profile and other information which would be of use in hydraulic developments. For description, plan, and profile of this survey see Bulletin No. 3 of the Geological Survey of Virginia.

The rainfall on the basin of the Roanoke above the fall line is about 48 inches per annum, and is evenly distributed throughout the year. The average amount probably increases slightly as the stream is ascended, though the records of rainfall over the basin are too incomplete to decide this matter. The slopes in the headwater and in the upper tributaries are steep, freshets on the river are violent, and the fluctuations of height occur with great rapidity. Rises of 50 feet and over have been noted at Weldon, and freshets in which the rate of rise is 10 feet a day or more are frequent.

## MEASUREMENTS OF STREAM FLOW.

## ROANOKE RIVER AT NEAL, N. C.

This station was established on July 27, 1896. It is located at the Norfolk and Carolina Railroad bridge at Neal, near Kelford, N. C.

The zero of the gage rod is over the center of the fourth floor beam of the second span from the north end of the bridge. The distance from the zero of the rod to the outer rim of the pulley is 2.47 feet, and the distance from the end of the weight to the pointer on the wire is 44.66 feet.

The section is a fairly good one, the course of the river being straight for some distance above and below the station and the bottom smooth. Being muddy, however, the bed is apt to cut out in seasons of high water, and both banks are subject to overflow. The observer was the bridge watchman, W. M. Adams, of Neal, N. C. The station was discontinued May 31, 1903.

## WATER-POWERS OF NORTH CAROLINA.

## LIST OF DISCHARGE MEASUREMENTS MADE ON ROANOKE RIVER AT NEAL, N. C.

Date.	Hydrographer.	Meter No.	Gage Height (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Discharge (Second-feet).
1896.						
July 27	E. W. Myers	2154	7.05	3,152	1.55	4,849
Sept. 7	do.	2154	1.31	2,148	1.21	2,610
Dec. 19	do.	2154	11.60	5,214	1.76	9,180
1897.						
Jan. 23	E. W. Myers	2154	12.65	5,551	2.37	13,155
Feb. 27	do.	2154	27.95	44,666	1.44	64,132
Mar. 17	do.	2154	24.71	31,590	1.19	37,659
May 17	do.	2154	18.40	7,240	2.65	19,219
Oct. 1	do.	2154	1.00	1,544	1.24	1,928
1898.						
Jan. 11	E. W. Myers	2154	4.43	2,606	1.65	4,334
May 10	do.	2154	22.50	8,140	3.42	27,880
1899.						
Feb. 5	E. W. Myers		20.80			23,998
May 25	do.		6.41			6,045
June 7	do.		6.45			6,110
Oct. 12	do.		8.60			7,973
Nov. 28	do.		4.13			4,439
1900.						
Feb. 10	E. W. Myers		9.70			9,361
Apr. 10	do.		7.10			6,266
Apr. 11	do.		6.90			6,002
Apr. 24	do.		25.60			49,896
May 11	do.		4.69			5,503
June 30	do.		10.12			9,530
Aug. 10	do.		1.40			2,342
Nov. 2	do.		3.18			3,734
1901.						
Apr. 3	E. W. Myers and others		19.90			24,004
Apr. 4	do.		21.80			28,875
July 17	do.		22.90			35,400
Nov. 30	do.		5.60			5,558
1902.						
May 9	J. S. Henderson		9.90	5,296	2.19	12,612
July 14	B. S. Drane		5.40	3,018	1.94	5,805
Aug. 20	do.		6.20	2,848	1.58	4,497
Oct. 15	do.		16.90	5,933	2.29	13,579

## DAILY GAGE HEIGHT, IN FEET, OF ROANOKE RIVER AT NEAL, N. C., FOR 1896.

Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		3.56	1.65	2.80	2.60	5.40	17		3.50	4.30	3.60	6.20	13.30
2		3.90	1.30	*21.80	2.50	15.85	18		2.70	4.64	3.40	5.80	13.30
3		4.15	1.00	23.00	2.40	19.70	19		5.30	3.50	3.10	5.12	11.70
4		3.70	1.00	25.10	2.40	17.70	20		5.20	2.50	2.90	4.70	10.00
5		3.40	1.24	24.20	2.90	14.80	21		3.90	2.80	2.70	4.40	8.80
6		3.00	1.30	20.80	3.10	12.50	22		2.90	2.60	2.50	4.20	7.80
7		2.90	1.30	17.00	17.00	11.00	23		2.40	2.80	2.40	4.00	7.00
8		2.80	5.05	13.70	20.30	10.30	24		2.00	3.30	2.50	3.80	6.40
9		2.50	8.90	11.10	18.50	9.90	25		2.03	3.30	2.60	3.70	5.90
10		2.20	7.30	8.90	14.90	9.20	26		2.25	2.60	2.60	3.60	5.40
11		2.10	5.00	7.10	11.80	8.40	27	7.05	2.50	8.10	2.70	3.60	5.00
12		2.30	3.30	5.60	9.70	7.60	28	5.09	2.20	1.80	2.70	3.50	4.60
13		2.90	2.20	4.50	8.20	6.90	29	4.08	2.90	1.60	2.80	3.50	4.10
14		5.20	1.80	4.20	7.10	6.30	30	4.24	2.70	1.90	2.72	3.80	3.90
15		5.60	1.56	4.10	6.30	6.00	31	3.80	2.20		2.60		4.00
16		4.60	2.10	3.80	6.10	8.30							

DAILY GAGE HEIGHT, IN FEET, OF ROANOKE RIVER AT NEAL, N. C., FOR 1897-1898.

1897.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	4.40	3.40	24.20	9.30	6.40	5.90	3.90	3.90	2.20	1.20	3.10	11.00
2.....	4.70	4.30	23.70	9.00	6.40	5.50	3.40	3.20	2.10	.80	3.40	10.10
3.....	5.00	11.50	19.10	8.70	6.80	5.90	3.10	2.60	2.90	.60	4.20	8.70
4.....	4.90	20.25	16.90	8.50	12.60	5.90	6.80	2.10	3.90	.50	5.50	7.30
5.....	4.90	21.50	14.90	8.40	17.10	5.30	6.90	2.00	3.40	.40	8.10	6.30
6.....	4.60	20.90	13.60	9.40	14.90	4.90	5.30	2.10	2.60	.30	7.50	6.90
7.....	4.40	21.10	15.20	11.00	12.40	5.70	3.90	1.90	2.00	.30	5.80	7.70
8.....	4.40	22.80	21.05	14.10	10.60	7.40	3.30	1.90	1.50	.20	4.50	7.80
9.....	4.50	24.30	22.25	13.40	9.10	7.50	3.30	2.40	1.10	.10	3.60	7.20
10.....	4.50	26.30	22.70	14.10	8.10	6.20	5.00	3.10	.90	.10	3.00	6.50
11.....	4.20	26.55	22.20	19.90	7.40	5.60	5.20	3.00	.80	.10	2.67	5.70
12.....	3.90	24.65	21.60	19.60	6.90	6.00	4.80	3.20	.60	.20	2.50	4.80
13.....	3.80	22.70	22.38	17.00	7.00	5.60	5.40	4.30	.50	.20	2.40	4.48
14.....	4.00	21.20	23.40	14.40	8.90	5.30	5.80	3.30	.50	.30	2.20	4.10
15.....	4.20	20.60	23.90	12.50	17.30	4.70	6.20	2.90	.40	.30	2.15	4.10
16.....	4.20	19.20	24.40	11.10	19.40	4.40	6.90	2.60	.30	6.40	2.10	4.15
17.....	4.10	18.00	24.70	10.20	19.10	4.10	6.10	2.10	.10	5.60	2.00	6.00
18.....	4.20	17.90	24.40	9.70	16.70	4.00	4.40	1.80	.10	3.90	1.93	7.40
19.....	4.60	16.70	23.40	9.40	13.70	3.90	3.40	1.40	.00	2.50	1.93	7.30
20.....	4.70	14.70	22.00	9.00	11.20	3.60	3.30	3.00	.10	1.80	1.93	6.20
21.....	5.00	14.20	20.70	8.40	9.50	5.30	5.10	2.60	.00	2.10	1.90	5.50
22.....	7.00	20.15	20.40	7.80	8.40	11.40	8.30	2.40	.00	2.30	1.90	5.20
23.....	12.65	22.45	19.30	7.40	7.80	11.50	9.90	2.30	.10	2.10	1.90	6.83
24.....	13.90	24.05	17.60	7.10	7.40	8.10	9.10	2.70	.20	3.70	1.80	11.00
25.....	13.00	25.80	15.90	6.80	7.30	5.80	7.10	4.20	.40	4.40	1.80	12.50
26.....	10.80	27.25	14.50	6.70	7.40	4.40	5.70	4.90	.30	4.10	1.90	4.30
27.....	8.60	28.00	13.40	6.60	11.00	4.10	4.90	4.20	.30	3.80	2.00	9.60
28.....	7.50	26.40	12.20	6.50	11.40	4.60	4.70	3.10	.80	3.70	2.00	9.30
29.....	5.90	-----	11.30	6.50	9.37	4.75	4.00	2.60	1.90	3.60	3.90	11.00
30.....	3.40	-----	10.40	6.50	7.40	4.50	3.90	2.40	1.60	3.70	11.18	11.80
31.....	3.10	-----	9.80	-----	6.30	-----	4.40	2.40	-----	3.40	-----	10.20
1898.												
1.....	8.60	8.60	3.40	10.00	6.10	11.20	3.20	7.80	5.30	13.50	16.80	7.50
2.....	7.40	7.30	3.50	15.30	5.40	9.80	3.60	7.20	5.30	11.00	17.30	8.10
3.....	6.40	6.70	3.40	15.20	4.70	8.60	3.40	6.70	4.80	9.10	15.00	8.30
4.....	5.70	5.80	3.50	12.80	4.30	7.10	2.70	6.20	3.80	7.50	12.30	9.00
5.....	4.80	4.90	4.30	10.60	4.00	5.67	1.90	5.30	3.30	6.10	10.10	10.50
6.....	4.20	4.10	7.40	9.90	4.30	4.40	1.85	4.50	2.70	5.40	8.50	15.70
7.....	4.00	3.60	9.70	13.00	6.70	3.80	4.20	3.50	2.30	5.80	7.70	20.90
8.....	4.40	4.00	9.20	15.40	15.95	3.30	4.20	5.65	7.50	12.80	6.90	20.10
9.....	4.60	4.40	8.10	14.30	20.85	3.00	3.90	6.90	8.90	13.00	6.80	17.50
10.....	4.60	4.80	6.90	11.50	22.51	2.90	5.30	5.90	8.60	10.40	6.70	14.80
11.....	4.43	4.90	6.00	9.80	22.51	2.70	5.90	4.70	7.90	8.10	6.20	12.70
12.....	4.50	4.80	5.40	8.30	20.00	2.30	5.90	4.10	5.50	6.40	5.70	10.90
13.....	4.68	4.70	4.90	7.30	16.95	2.20	4.80	4.60	3.80	5.30	5.30	9.50
14.....	4.80	4.70	4.80	7.40	14.20	2.10	5.15	5.30	2.60	4.60	5.30	8.50
15.....	4.80	4.40	5.00	8.40	12.10	2.40	4.40	9.20	2.10	4.20	5.50	7.70
16.....	4.85	4.20	5.00	7.90	11.32	4.20	3.30	11.70	1.80	3.80	5.40	7.10
17.....	4.90	3.90	4.80	7.80	12.50	6.90	2.50	15.70	1.60	3.50	5.50	6.50
18.....	4.60	3.70	4.60	8.20	12.75	9.00	3.30	12.50	1.40	3.20	5.70	5.75
19.....	4.30	3.60	4.40	7.90	11.90	12.30	6.90	8.90	1.35	3.20	6.00	5.50
20.....	4.30	3.40	4.20	7.10	9.90	15.00	7.80	6.60	1.20	3.80	6.90	5.90
21.....	4.10	3.40	4.00	6.40	8.30	14.70	8.60	6.00	1.10	6.30	9.00	6.70
22.....	4.20	3.80	3.80	5.70	6.50	15.80	7.80	5.70	1.00	11.80	11.10	7.30
23.....	5.10	4.50	3.60	5.20	5.60	13.50	6.15	7.80	1.20	10.40	10.80	8.20
24.....	6.90	5.00	3.50	4.90	10.60	10.20	4.90	6.80	2.00	12.10	9.80	9.50
25.....	7.40	4.90	3.45	4.80	21.61	7.40	4.60	5.30	21.28	22.30	9.20	14.80
26.....	7.30	4.60	3.40	5.50	22.66	5.10	5.90	4.20	22.73	22.10	9.30	17.80
27.....	8.50	4.20	3.50	8.10	22.20	4.00	7.25	3.30	23.88	20.98	8.90	15.20
28.....	12.00	3.80	4.10	9.40	20.60	3.20	6.90	4.80	23.20	16.50	7.90	12.75
29.....	13.50	-----	4.80	8.50	18.20	2.90	5.30	4.70	20.60	14.30	7.00	10.80
30.....	12.00	-----	5.10	7.20	16.00	3.15	5.80	5.00	17.00	12.40	7.20	9.50
31.....	10.10	-----	6.00	-----	13.30	-----	8.10	4.80	-----	11.20	-----	8.00

## DAILY GAGE HEIGHT, IN FEET, OF ROANOKE RIVER AT NEAL, N. C., FOR 1899-1900.

1899.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	7.40	9.10	22.80	20.60	10.50	8.10	8.40	7.30	11.00	3.60	4.30	4.00
2.....	7.60	10.20	23.40	19.10	9.50	10.30	7.20	6.50	8.20	3.00	10.50	4.20
3.....	10.50	10.70	22.80	17.40	9.00	12.20	5.70	5.90	5.70	2.70	12.30	4.30
4.....	14.20	11.00	21.80	16.00	9.10	12.60	4.70	5.10	4.10	2.50	12.00	4.20
5.....	13.10	20.75	22.70	15.20	9.00	10.50	4.20	3.80	3.90	2.30	13.40	4.10
6.....	11.35	22.35	24.00	14.90	8.80	8.30	4.20	3.50	5.70	2.80	14.15	3.95
7.....	10.80	23.95	25.25	15.00	8.70	6.50	4.60	3.60	5.00	5.30	12.10	3.80
8.....	17.25	25.55	26.08	17.70	8.60	5.40	7.10	4.20	4.00	6.90	9.50	3.50
9.....	23.25	26.80	26.10	21.40	8.70	4.90	11.10	5.60	3.10	7.80	7.60	3.30
10.....	25.50	27.05	25.10	23.00	8.90	4.60	11.20	6.70	2.70	9.10	6.30	3.20
11.....	27.75	26.40	23.20	23.60	10.80	5.00	9.80	6.20	3.70	9.90	5.50	3.10
12.....	26.80	24.50	21.20	22.30	11.30	8.10	7.50	5.00	5.80	8.70	5.10	3.20
13.....	24.55	21.30	19.20	20.20	13.00	17.80	5.50	5.40	6.00	6.90	4.60	3.50
14.....	22.25	17.50	17.60	18.30	12.60	21.50	4.20	7.30	5.50	5.50	4.30	7.00
15.....	21.80	14.30	17.70	16.80	11.90	22.40	3.50	5.40	4.30	4.50	4.10	11.50
16.....	21.00	12.50	22.80	15.40	11.40	22.40	3.20	4.50	3.40	3.90	4.00	11.50
17.....	19.05	12.90	23.80	14.30	10.40	21.00	3.10	6.50	2.90	3.60	3.90	9.20
18.....	18.00	19.50	25.70	13.40	9.20	18.10	3.30	10.90	2.40	3.45	3.80	7.20
19.....	16.90	19.60	26.80	12.60	8.10	15.20	3.40	9.20	2.10	3.30	3.70	6.00
20.....	15.80	24.70	26.10	11.90	7.50	12.40	4.20	7.20	2.00	3.25	3.60	5.10
21.....	14.40	26.80	26.10	11.40	7.10	10.20	4.50	5.40	2.00	3.00	3.50	4.70
22.....	13.20	27.25	27.80	10.50	6.90	8.60	4.80	4.30	11.25	3.20	3.40	4.40
23.....	12.20	26.90	30.00	10.00	6.60	7.30	3.90	3.30	14.00	2.90	3.35	4.30
24.....	11.20	26.20	29.35	9.70	6.30	6.30	3.80	2.80	10.60	2.80	3.35	4.45
25.....	10.80	25.20	27.40	9.40	6.40	5.20	4.70	2.40	7.55	2.70	3.60	6.40
26.....	10.30	23.60	25.50	9.10	6.90	4.80	4.80	2.10	5.40	2.60	3.80	8.40
27.....	10.10	22.00	22.80	9.40	7.00	4.40	7.20	1.80	4.70	2.60	4.00	8.60
28.....	9.90	21.80	20.70	11.80	6.40	4.30	7.30	1.60	4.90	2.60	4.10	8.10
29.....	8.70	-----	19.60	12.30	5.90	6.30	11.80	1.70	5.10	2.70	3.80	6.80
30.....	8.20	-----	20.10	11.60	5.60	6.70	11.90	13.70	4.60	2.70	3.70	5.60
31.....	8.60	-----	21.00	-----	5.90	-----	9.50	12.90	-----	3.00	-----	3.50
1900.												
1.....	2.10	7.80	16.40	12.20	12.90	5.80	9.15	7.40	2.15	1.80	3.70	8.70
2.....	2.10	6.70	18.50	11.60	11.50	5.40	8.10	4.80	2.50	2.60	3.20	6.50
3.....	2.00	5.00	21.80	11.10	10.40	5.20	7.20	3.30	1.80	1.90	2.80	5.30
4.....	2.20	4.30	23.10	10.20	9.60	4.80	6.30	2.70	1.20	1.20	4.00	4.60
5.....	2.20	4.60	24.65	9.50	8.80	4.50	5.30	2.60	.70	1.25	6.40	4.70
6.....	3.60	6.80	23.80	9.00	8.10	4.20	4.50	2.25	.40	1.45	7.80	11.75
7.....	4.30	12.70	21.50	8.50	7.60	4.50	4.00	1.90	.40	1.45	9.00	20.75
8.....	4.30	12.70	19.00	8.10	7.20	4.50	3.70	1.60	.30	1.50	7.90	18.80
9.....	4.30	11.10	17.30	7.50	7.00	4.30	3.70	1.30	.30	1.90	6.50	14.60
10.....	4.50	9.75	17.70	7.20	7.10	4.20	3.40	1.30	.70	2.90	5.10	11.80
11.....	5.10	9.90	18.10	6.90	7.00	4.10	3.00	1.20	.50	3.50	4.20	9.40
12.....	7.00	11.10	18.30	6.90	6.60	4.20	2.90	1.00	.20	3.20	3.70	7.70
13.....	12.00	13.10	17.30	8.50	6.30	4.15	3.10	.90	.10	3.20	3.40	6.60
14.....	19.60	20.50	15.30	9.80	5.90	4.00	2.60	.80	.30	2.20	3.10	5.80
15.....	19.90	22.50	13.60	10.20	5.50	4.10	2.50	.60	.40	2.10	2.85	5.10
16.....	17.60	23.88	12.70	9.70	5.20	7.60	2.30	.40	.40	1.70	2.80	4.70
17.....	14.30	23.90	12.10	8.50	4.80	9.90	2.80	.40	.10	2.80	2.70	4.30
18.....	11.70	22.80	13.40	7.50	4.70	11.20	2.50	.60	1.80	3.90	2.50	4.20
19.....	10.20	19.70	14.40	7.10	4.95	17.40	2.00	.40	12.40	3.70	2.40	3.85
20.....	9.30	17.00	14.10	21.75	5.10	16.10	1.90	.40	9.20	2.90	2.25	3.70
21.....	18.05	14.70	13.40	23.40	7.80	12.90	1.60	.40	6.20	2.20	2.25	3.80
22.....	21.25	3.60	13.90	24.63	7.60	9.80	1.40	.40	3.80	1.70	2.20	4.40
23.....	23.40	14.00	15.80	25.95	6.70	8.00	1.40	.40	2.50	1.50	2.28	4.90
24.....	23.50	21.65	15.30	25.55	5.90	6.70	1.50	.70	1.30	1.35	2.35	5.40
25.....	21.60	22.30	13.50	24.20	6.00	6.30	6.00	.90	1.45	1.20	2.50	6.40
26.....	18.50	22.10	12.70	23.60	6.60	11.50	9.60	2.00	1.35	5.50	2.60	6.80
27.....	15.80	20.95	13.00	21.10	14.70	15.20	8.60	2.10	1.80	15.40	2.70	8.20
28.....	13.10	18.80	14.30	18.40	13.70	13.00	10.45	1.50	2.40	11.80	3.00	7.90
29.....	11.70	-----	14.20	16.00	10.40	12.00	13.60	1.10	2.50	8.50	11.60	6.95
30.....	10.40	-----	13.40	14.30	8.00	10.45	13.45	1.10	2.50	6.10	11.40	5.90
31.....	9.10	-----	13.30	-----	6.70	-----	10.40	1.40	-----	4.60	-----	5.90

DAILY GAGE HEIGHT, IN FEET, OF ROANOKE RIVER AT NEAL, N. C., FOR 1901-1902.

1901.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	6.60	5.80	3.55	19.50	11.40	21.30	10.40	5.70	22.10	10.50	4.40	5.20
2.....	7.50	5.60	3.80	16.30	10.20	18.80	8.70	5.50	19.50	12.20	4.45	4.80
3.....	7.90	5.50	3.80	19.00	9.20	16.70	10.70	5.50	17.40	13.00	4.40	4.60
4.....	7.70	5.40	3.60	22.65	8.30	14.40	9.80	5.20	15.50	13.50	4.40	4.90
5.....	6.70	5.20	3.45	24.45	7.40	12.70	9.20	4.70	13.50	11.90	4.40	6.10
6.....	6.00	5.60	3.40	26.25	6.80	11.30	7.70	4.30	11.70	9.70	4.40	8.60
7.....	5.20	5.80	3.35	26.45	6.30	10.10	6.10	5.80	10.40	8.10	4.40	9.60
8.....	4.70	7.10	3.40	25.90	5.50	9.50	5.70	17.40	9.10	7.00	4.30	8.30
9.....	4.40	6.60	3.40	23.40	5.90	8.90	7.10	23.05	8.30	6.30	4.35	7.00
10.....	4.30	6.20	3.20	20.40	6.50	8.60	8.70	25.15	7.60	5.90	4.40	6.20
11.....	4.30	7.10	3.30	17.60	11.40	9.40	8.50	26.30	7.00	5.70	4.30	5.80
12.....	4.40	8.35	3.80	15.40	16.40	8.10	8.00	25.10	6.60	5.50	4.25	5.80
13.....	5.75	8.50	5.60	12.70	15.70	7.00	6.90	23.35	6.20	5.40	4.25	5.80
14.....	21.58	7.70	6.40	11.60	13.20	6.25	6.10	23.20	6.00	6.50	4.30	6.10
15.....	22.65	6.90	8.85	12.60	10.30	5.80	8.80	23.80	6.00	8.60	4.30	7.30
16.....	22.70	6.20	8.90	18.25	8.50	5.75	17.10	24.85	5.80	8.45	4.30	13.10
17.....	20.16	5.70	6.60	19.30	7.10	6.20	22.80	26.00	5.60	8.20	4.30	21.70
18.....	17.30	5.20	5.65	17.80	6.10	12.40	24.65	26.37	6.40	7.60	4.15	22.40
19.....	15.20	4.95	4.95	15.20	5.40	15.50	25.80	26.73	14.20	6.50	4.00	22.10
20.....	13.40	4.80	4.40	13.10	5.50	15.60	24.80	26.25	19.20	5.80	4.00	19.20
21.....	11.70	4.60	4.40	11.60	7.00	13.20	23.95	25.10	18.50	5.30	4.00	15.90
22.....	9.90	4.50	4.80	16.50	9.70	10.70	22.90	23.70	15.80	5.10	4.00	13.30
23.....	8.50	4.40	4.70	20.50	20.30	12.00	20.45	22.15	13.10	4.90	4.00	9.80
24.....	7.50	4.20	4.90	23.15	23.25	11.90	17.60	20.10	10.70	4.80	4.70	8.80
25.....	6.90	3.90	5.60	23.00	26.10	10.40	15.10	18.30	8.80	4.70	5.60	8.80
26.....	6.50	3.70	6.10	21.30	30.30	10.50	13.00	19.10	7.60	4.60	7.60	10.60
27.....	6.15	3.50	19.95	19.00	29.25	9.50	11.10	19.35	6.60	4.50	9.10	12.70
28.....	6.00	3.80	22.50	16.70	27.27	8.60	9.30	19.80	6.20	4.50	8.30	20.80
29.....	5.60	-----	23.70	14.10	25.35	12.30	7.90	22.55	6.30	4.40	6.70	23.50
30.....	5.20	-----	24.10	12.90	24.15	12.90	7.20	23.67	8.00	4.30	5.60	26.05
31.....	5.20	-----	22.65	-----	23.00	-----	6.40	23.60	-----	4.30	-----	25.95
1902.												
1.....	24.45	16.30	27.50	20.70	10.00	5.30	6.60	3.10	2.60	6.30	9.50	11.60
2.....	27.60	17.20	28.10	19.30	11.20	4.80	7.30	4.30	2.70	6.00	7.70	12.50
3.....	29.85	21.70	27.80	17.00	10.00	4.50	6.60	4.60	2.40	6.00	6.20	16.50
4.....	28.15	23.05	27.75	14.90	9.65	4.30	6.20	5.30	2.90	6.80	5.30	20.00
5.....	25.90	24.10	26.60	13.60	11.70	4.20	5.50	5.10	4.00	6.30	4.90	22.50
6.....	23.50	24.20	24.80	12.50	11.80	4.00	4.60	4.50	6.00	5.20	4.70	22.70
7.....	20.70	22.90	23.70	12.00	11.45	3.80	3.75	3.80	5.50	17.60	4.40	23.15
8.....	18.05	20.40	22.70	12.20	9.45	3.50	3.20	3.20	5.35	23.02	4.40	23.45
9.....	16.00	18.10	21.30	17.50	9.60	3.80	4.30	3.00	4.60	23.65	5.30	22.00
10.....	14.50	16.10	19.50	19.90	10.50	3.80	5.90	3.20	3.90	21.65	5.75	19.35
11.....	13.30	14.30	18.30	20.00	10.40	3.80	5.40	3.30	5.30	19.00	5.80	16.90
12.....	12.30	12.60	17.30	18.60	9.75	3.90	5.10	3.10	6.60	14.90	5.30	14.80
13.....	11.40	11.50	16.00	16.30	7.80	3.70	6.55	(*)	5.25	15.00	4.90	13.05
14.....	10.50	10.70	14.90	14.50	7.00	3.50	6.10	-----	4.50	18.00	4.60	12.10
15.....	9.50	10.00	14.00	13.20	6.60	3.20	4.70	-----	4.00	17.30	4.40	12.00
16.....	8.50	9.50	13.10	12.30	6.50	3.40	3.80	-----	3.40	13.90	4.30	12.70
17.....	7.85	9.10	12.60	11.60	6.80	3.70	3.30	-----	2.85	11.10	4.20	12.30
18.....	7.90	9.00	13.50	11.20	7.40	18.25	3.00	-----	2.55	19.00	4.10	12.80
19.....	8.00	9.10	20.10	10.90	10.90	21.60	2.80	-----	2.40	7.40	4.30	17.45
20.....	7.95	9.00	19.80	10.60	10.90	20.80	2.40	6.33	2.30	6.30	4.70	18.30
21.....	7.50	8.60	17.80	10.30	9.70	16.90	2.20	5.00	2.20	5.65	13.30	16.10
22.....	9.40	10.50	15.80	9.80	9.30	13.80	2.00	3.85	2.20	5.10	13.20	14.20
23.....	15.80	13.20	14.50	9.30	8.70	11.25	2.20	3.40	2.30	4.70	10.70	17.00
24.....	17.00	17.20	13.40	9.05	7.60	8.65	2.00	3.00	2.30	4.50	8.60	18.40
25.....	16.40	19.20	12.60	8.60	6.50	6.90	2.30	3.80	2.30	4.30	7.20	18.30
26.....	14.10	22.20	11.80	8.30	5.90	6.00	2.40	3.30	2.40	4.20	6.95	16.10
27.....	12.40	23.65	11.10	8.00	6.10	5.10	2.35	3.10	2.50	4.00	7.80	13.90
28.....	12.00	25.65	10.50	7.70	6.60	4.90	2.20	3.00	2.50	3.90	13.60	12.30
29.....	11.70	-----	10.10	7.50	6.45	5.60	1.80	3.20	3.80	4.00	15.00	10.90
30.....	13.90	-----	12.50	7.50	6.10	5.70	1.70	3.40	6.10	9.75	13.20	9.40
31.....	15.00	-----	19.00	-----	5.60	-----	1.80	2.90	-----	11.20	-----	8.85

\*Gage wire broken August 13 to 19.



MEAN DAILY GAGE HEIGHT, IN FEET, OF ROANOKE RIVER AT NEAL, N. C., FOR 1903.

Day.	Jan.	Feb.	Mar.	Apr.	May.	Day.	Jan.	Feb.	Mar.	Apr.	May.
1-----	9.20	17.30	18.40	24.80	20.90	17-----	12.30	19.90	17.00	24.65	9.00
2-----	9.30	16.40	22.40	25.25	18.80	18-----	11.25	23.50	15.70	24.10	8.75
3-----	9.30	14.60	23.50	25.35	17.00	19-----	11.25	29.20	14.60	22.60	8.50
4-----	21.25	13.30	23.70	24.45	15.50	20-----	10.65	25.60	13.70	20.70	8.30
5-----	23.55	12.10	22.20	23.50	14.30	21-----	9.95	29.30	13.00	19.00	8.05
6-----	25.00	21.90	20.10	22.80	13.80	22-----	9.70	27.80	15.10	18.70	7.90
7-----	26.55	23.15	18.10	21.90	13.20	23-----	13.10	25.90	23.05	18.70	7.70
8-----	26.60	23.20	16.70	20.40	12.50	24-----	17.40	23.60	25.15	21.10	7.50
9-----	24.80	22.50	16.50	21.30	11.80	25-----	16.50	21.20	29.30	21.20	7.55
10-----	22.50	22.20	16.40	23.05	11.35	26-----	14.90	19.00	30.35	20.40	7.85
11-----	19.90	21.80	17.20	24.00	10.80	27-----	13.30	17.20	30.20	20.70	8.00
12-----	17.60	21.10	17.90	24.25	10.30	28-----	12.10	15.70	29.05	22.10	8.50
13-----	17.50	21.90	18.22	23.30	9.95	29-----	11.60	-----	26.60	22.45	9.70
14-----	16.80	23.70	18.65	21.60	9.60	30-----	17.40	-----	24.80	22.30	10.80
15-----	15.40	21.80	18.65	23.45	9.40	31-----	20.00	-----	24.40	-----	-----
16-----	13.50	20.60	18.20	24.35	9.20						

RATING TABLE FOR ROANOKE RIVER AT NEAL, N. C., FOR 1897.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
0.00	2,000	4.20	3,300	8.40	6,000	16.50	15,950
0.20	2,020	4.40	3,400	8.60	6,240	17.00	16,750
0.40	2,040	4.60	3,500	8.80	6,420	17.50	17,565
0.60	2,060	4.80	3,600	9.00	6,600	18.00	18,400
0.80	2,100	5.00	3,700	9.20	6,780	18.50	19,310
1.00	2,140	5.20	3,805	9.40	6,960	19.00	20,300
1.20	2,190	5.40	3,915	9.60	7,140	19.50	21,380
1.40	2,240	5.60	4,025	9.80	7,320	20.00	22,500
1.60	2,290	5.80	4,135	10.00	7,500	20.50	23,720
1.80	2,340	6.00	4,235	10.50	8,000	21.00	25,000
2.00	2,400	6.20	4,355	11.00	8,500	21.50	26,320
2.20	2,475	6.40	4,465	11.50	9,040	22.00	27,700
2.40	2,540	6.60	4,585	12.00	9,600	22.50	29,190
2.60	2,610	6.80	4,705	12.50	10,190	23.00	30,800
2.80	2,680	7.00	4,850	13.00	10,800	23.50	32,570
3.00	2,750	7.20	5,010	13.50	11,460	24.00	34,550
3.20	2,830	7.40	5,180	14.00	12,150	25.00	39,200
3.40	2,915	7.60	5,350	14.50	12,860	26.00	44,800
3.60	3,005	7.80	5,520	15.00	13,600	27.00	52,500
3.80	3,100	8.00	5,700	15.50	14,370	28.00	64,300
4.00	3,200	8.20	5,890	16.00	15,150	-----	-----

RATING TABLE FOR ROANOKE RIVER AT NEAL, N. C., FOR 1898-1899-1900.

Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).
1898.							
1.00	2,000	4.40	3,384	8.80	6,080	18.00	18,300
1.10	2,095	4.60	3,476	9.00	6,250	18.50	19,180
1.20	2,130	4.80	3,568	9.20	6,430	19.00	20,100
1.30	2,165	5.00	3,660	9.40	6,610	19.50	21,100
1.40	2,200	5.20	3,760	9.60	6,800	20.00	22,300
1.50	2,235	5.40	3,860	9.80	7,000	20.50	23,575
1.60	2,270	5.60	3,965	10.00	7,200	21.00	24,900
1.70	2,305	5.80	4,075	10.50	7,700	21.50	26,300
1.80	2,340	6.00	4,185	11.00	8,200	22.00	27,750
1.90	2,375	6.20	4,295	11.50	8,750	22.50	29,270
2.00	2,410	6.40	4,405	12.00	9,300	23.00	30,900
2.20	2,490	6.60	4,518	12.50	9,950	23.50	32,640
2.40	2,550	6.80	4,634	13.00	10,600	24.00	34,550
2.60	2,623	7.00	4,750	13.50	11,300	24.50	36,780
2.80	2,699	7.20	4,880	14.00	12,000	25.00	39,150
3.00	2,775	7.40	5,010	14.50	12,750	25.50	41,950
3.20	2,855	7.60	5,150	15.00	13,500	26.00	45,000
3.40	2,935	7.80	5,300	15.50	14,275	26.50	49,500
3.60	3,020	8.00	5,450	16.00	15,075	27.00	54,250
3.80	3,110	8.20	5,600	16.50	15,875	27.50	59,200
4.00	3,200	8.40	5,750	17.00	16,600	28.00	64,300
4.20	3,292	8.60	5,910	17.50	17,440	-----	-----
1899.							
1.0	2,270	3.4	3,950	7.0	6,525	13.0	12,340
1.2	2,410	3.6	4,090	7.5	6,970	13.5	12,890
1.4	2,550	3.8	4,230	8.0	7,420	14.0	13,040
1.6	2,690	4.0	4,370	8.5	7,870	14.5	14,040
1.8	2,830	4.2	4,510	9.0	8,345	15.0	14,640
2.0	2,970	4.4	4,650	9.5	8,840	16.0	15,940
2.2	3,110	4.6	4,790	10.0	9,340	17.0	17,240
2.4	3,250	4.8	4,930	10.5	9,840	18.0	18,600
2.6	3,390	5.0	5,070	11.0	10,340	19.0	20,400
2.8	3,530	5.5	5,420	11.5	10,840	20.0	22,400
3.0	3,670	6.0	5,770	12.0	11,340	25.0	39,700
3.2	3,810	6.5	6,120	12.5	11,840	-----	-----
1900.							
0.0	-----	2.6	3,000	5.5	5,055	12.0	11,530
0.2	1,440	2.8	3,140	6.0	5,430	12.5	12,105
0.4	1,560	3.0	3,280	6.5	5,830	13.0	12,680
0.6	1,680	3.2	3,420	7.0	6,230	13.5	13,255
0.8	1,800	3.4	3,560	7.5	6,705	14.0	13,830
1.0	1,920	3.6	3,700	8.0	7,200	14.5	14,405
1.2	2,050	3.8	3,840	8.5	7,700	15.0	15,000
1.4	2,180	4.0	3,980	9.0	8,200	16.0	16,200
1.6	2,310	4.2	4,120	9.5	8,730	17.0	17,430
1.8	2,440	4.4	4,260	10.0	9,280	18.0	18,680
2.0	2,580	4.6	4,400	10.5	9,830	19.0	20,080
2.2	2,720	4.8	4,540	11.0	10,380	20.0	22,000
2.4	2,860	5.0	4,680	11.5	10,955	25.0	40,400

## WATER-POWERS OF NORTH CAROLINA.

RATING TABLE FOR ROANOKE RIVER AT NEAL, N. C., FOR 1901.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
0.0	1,320	3.4	3,560	6.6	5,910	12.5	12,130
0.2	1,440	3.6	3,700	6.8	6,070	13.0	12,730
0.4	1,560	3.8	3,840	7.0	6,230	13.5	13,385
0.6	1,680	4.0	3,980	7.2	6,424	14.0	14,030
0.8	1,800	4.2	4,120	7.4	6,618	14.5	14,735
1.0	1,920	4.4	4,260	7.6	6,812	15.0	15,430
1.2	2,050	4.6	4,400	7.8	7,006	15.5	16,190
1.4	2,180	4.8	4,540	8.0	7,200	16.0	16,930
1.6	2,310	5.0	4,680	8.5	7,700	16.5	17,730
1.8	2,440	5.2	4,830	9.0	8,200	17.0	18,530
2.0	2,580	5.4	4,980	9.5	8,730	17.5	19,405
2.2	2,720	5.6	5,130	10.0	9,280	18.0	20,280
2.4	2,860	5.8	5,280	10.5	9,830	19.0	22,130
2.6	3,000	6.0	5,430	11.0	10,380	20.0	24,230
2.8	3,140	6.2	5,590	11.5	10,955	25.0	46,500
3.0	3,280	6.4	5,750	12.0	11,530	30.0	82,000
3.2	3,420	---	---	---	---	---	---

RATING TABLE FOR ROANOKE RIVER AT NEAL, N. C., FOR 1902 AND 1903.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.0	1,920	4.0	3,980	7.0	6,230	13.0	12,730
1.2	2,050	4.2	4,120	7.2	6,420	13.5	13,380
1.4	2,180	4.4	4,260	7.4	6,610	14.0	14,030
1.6	2,310	4.6	4,400	7.6	6,800	14.5	14,730
1.8	2,440	4.8	4,540	7.8	7,000	15.0	15,430
2.0	2,580	5.0	4,680	8.0	7,200	15.5	16,180
2.2	2,720	5.2	4,830	8.5	7,700	16.0	16,930
2.4	2,860	5.4	4,980	9.0	8,200	16.5	17,730
2.6	3,000	5.6	5,130	9.5	8,730	17.0	18,530
2.8	3,140	5.8	5,280	10.0	9,280	17.5	19,405
3.0	3,280	6.0	5,430	10.5	9,830	18.0	20,280
3.2	3,420	6.2	5,590	11.0	10,380	19.0	22,130
3.4	3,560	6.4	5,750	11.5	10,955	20.0	24,230
3.6	3,700	6.6	5,910	12.0	11,530	25.0	46,500
3.8	3,840	6.8	6,070	12.5	12,130	30.0	82,000

ESTIMATED MONTHLY DISCHARGE OF ROANOKE RIVER AT NEAL, N. C.

[Drainage area, 8,717 square miles.]

Month.	Discharge in Second-feet.			Total in Acre-feet.	Run-off.	
	Maxi- mum.	Mini- mum.	Mean.		Depth in Inches.	Second- feet per Square Mile.
1896.						
August.....	4,105	2,750	3,154	193,933	0.41	0.36
September.....	6,510	2,400	3,217	191,424	0.41	0.37
October.....	39,720	2,890	9,117	560,586	1.21	1.05
November.....	23,220	2,890	5,896	350,836	0.75	0.68
December.....	21,820	3,415	7,423	456,425	0.98	0.85

ESTIMATED MONTHLY DISCHARGE OF ROANOKE RIVER AT NEAL, N. C.—Continued.  
[Drainage area, 8,717 square miles.]

Month.	Discharge in Second-feet.			Total in Acre-feet.	Run-off.	
	Maxi- mum.	Mini- mum.	Mean.		Depth in Inches.	Second- feet per Square Mile.
1897.						
January.....	12,010	2,790	4,501	276,755	0.60	0.52
February.....	64,300	2,915	28,178	1,564,930	3.36	3.23
March.....	37,700	7,320	22,824	1,403,390	3.02	2.62
April.....	22,270	4,525	8,440	502,215	1.08	0.97
May.....	21,160	4,410	8,707	535,350	1.15	1.00
June.....	9,040	3,005	4,252	253,010	0.55	0.49
July.....	7,410	2,790	3,956	243,245	0.52	0.45
August.....	3,650	2,240	2,673	164,360	0.36	0.31
September.....	3,150	2,000	2,217	131,920	0.28	0.25
October.....	4,465	2,010	2,561	157,470	0.33	0.29
November.....	8,710	2,340	3,095	184,165	0.40	0.36
December.....	10,190	3,250	5,520	339,410	0.72	0.63
The year.....	64,300	2,000	8,077	5,756,220	12.37	0.93
1898.						
January.....	11,300	3,200	4,597	282,660	0.61	0.53
February.....	5,910	2,935	3,544	196,824	0.43	0.41
March.....	6,900	2,935	3,736	229,719	0.49	0.43
April.....	14,120	3,568	6,903	410,756	0.88	0.79
May.....	29,859	3,200	13,100	805,493	1.73	1.50
June.....	14,755	2,445	5,399	321,262	0.69	0.62
July.....	5,910	2,347	3,766	231,564	0.49	0.43
August.....	14,595	2,895	4,815	296,065	0.63	0.55
September.....	34,274	2,060	7,980	474,842	1.02	0.92
October.....	28,762	2,855	8,582	527,690	1.13	0.98
November.....	17,204	3,810	6,437	383,027	0.82	0.74
December.....	24,735	3,910	8,958	550,810	1.19	1.03
The year.....	34,274	2,060	6,485	4,710,712	10.11	0.74
1899.						
January.....	62,750	6,880	18,585	1,142,747	2.46	2.13
February.....	58,300	8,440	29,967	1,664,283	3.58	3.44
March.....	83,000	18,030	37,777	2,322,817	4.99	4.33
April.....	31,500	8,440	15,863	943,914	2.03	1.82
May.....	12,340	5,400	8,106	498,419	1.07	0.93
June.....	27,640	4,580	10,759	640,205	1.37	1.23
July.....	11,240	3,740	6,095	374,767	0.81	0.70
August.....	13,110	2,690	5,626	345,929	0.75	0.65
September.....	13,440	2,970	5,564	331,081	0.70	0.63
October.....	9,240	3,180	4,563	280,508	0.60	0.52
November.....	13,620	3,915	6,132	364,879	0.78	0.70
December.....	10,840	3,740	5,566	342,240	0.72	0.63
The year.....	83,000	2,690	12,884	9,251,849	19.86	1.48

ESTIMATED MONTHLY DISCHARGE OF ROANOKE RIVER AT ROANOKE, VA.  
[Drainage area, 388 square miles.]

1900.						
January.....	4,170	110	430	26,803	1.29	1.12
February.....	5,195	187	763	42,375	2.05	1.97
March.....	4,887	480	1,044	64,193	3.11	2.69
April.....	3,452	260	667	39,689	1.92	1.72
May.....	1,010	187	313	19,246	0.93	0.81
June.....	1,240	187	411	24,456	1.18	1.06
July.....	570	130	220	13,527	0.66	0.57
August.....	140	85	100	6,149	0.30	0.26
September.....	670	85	134	7,974	0.39	0.35
October.....	5,502	120	435	26,747	1.29	1.12
November.....	12,575	155	733	43,617	2.11	1.89
December.....	4,887	240	630	38,737	1.87	1.62
The year.....	12,575	85	491	353,519	17.10	1.26

## WATER-POWERS OF NORTH CAROLINA.

ESTIMATED MONTHLY DISCHARGE OF ROANOKE RIVER AT ROANOKE, VA.—Continued.  
[Drainage area, 388 square miles.]

Month.	Discharge in Second-feet.			Total in Acre-feet.	Run-off.	
	Maxi- mum.	Mini- mum.	Mean.		Depth in Inches.	Second- feet per Square Mile.
1901.						
January.....	34,125	4,190	10,053	-----	1.33	1.15
February.....	7,700	3,630	5,186	-----	.61	.59
March.....	41,550	3,420	9,370	-----	1.23	1.07
April.....	56,960	11,070	24,914	-----	3.19	2.86
May.....	85,200	4,980	20,817	-----	2.76	2.30
June.....	27,640	5,240	11,138	-----	1.43	1.28
July.....	51,055	5,205	15,898	-----	2.10	1.82
August.....	57,300	4,190	30,807	-----	4.08	3.54
September.....	30,550	5,130	10,919	-----	1.39	1.25
October.....	13,380	4,190	6,563	-----	.86	.75
November.....	8,305	3,980	4,637	-----	.59	.53
December.....	52,535	4,400	14,865	-----	1.96	1.70
The year.....	85,200	3,420	13,763	-----	21.53	1.58

ESTIMATED MONTHLY DISCHARGE OF ROANOKE RIVER AT NEAL, N. C.  
[Drainage area, 8,717 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maximum.	Minimum.	Mean.	Second-feet per Square Mile.	Depth in Inches.
1902.					
January.....	80,800	6,705	21,294	2.44	2.81
February.....	50,202	7,800	20,529	2.36	2.46
March.....	67,250	9,390	26,139	3.00	3.46
April.....	25,910	6,705	13,258	1.52	1.70
May.....	11,300	5,130	7,965	.91	1.05
June.....	28,650	3,420	7,493	.86	.96
July.....	6,515	2,375	3,916	.45	.52
August 1 to 12 and 20 to 31*			*3,533	*.44	*.39
September.....	5,910	2,720	3,703	.42	.47
October.....	39,075	3,910	11,793	1.35	1.56
November.....	15,430	4,050	6,795	.78	.87
December.....	37,975	8,050	18,288	2.10	2.42
1903.					
January.....	56,277	8,412	20,798	2.39	2.76
February.....	76,400	11,650	33,081	3.79	3.95
March.....	84,800	12,730	32,985	3.78	4.36
April.....	48,493	21,575	33,880	3.89	4.34
May 1-30.....	26,390	6,705	10,676	1.22	1.36

\*Partial month.

## ROANOKE RIVER AT CLARKSVILLE, VA.

This station was located about 1,000 feet above the junction of Roanoke and Dan rivers, at the Southern Railway bridge which crosses both streams.

A station was also maintained on Dan River at the same time.

A flood channel above connecting the two streams, and the fact that the stations were so near the junction that either gage was liable to be affected by back water from the other river, makes the estimated discharge somewhat uncertain.

Both stations were abandoned in 1898.

DISCHARGE MEASUREMENTS OF ROANOKE RIVER, ABOVE JUNCTION WITH DAN,  
AT CLARKSVILLE, VA.

Date.	Hydrographer.	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second-feet).
1895.					
Oct. 3	C. C. Babb	550	0.97	-0.07	533
Oct. 28	do.	659	1.31	0.28	861
Dec. 5	do.	917	1.25	0.61	1,151
1896.					
Apr. 22	E. W. Myers	1,256	1.53	3.43	1,971
May 26	do.	1,401	1.39	3.20	1,956
July 15	do.	1,890	2.25	4.70	4,252
Sept. 15	A. P. Davis	723	1.03	2.00	748
1897.					
Feb. 25	E. W. Myers	7,250	4.03	11.95	29,260
Mar. 18	do.	2,838	2.93	3.67	8,326
Sept. 29	do.	610	1.25	-0.25	763
1898.					
Feb. 26	E. W. Myers	992	1.97	0.70	1,969

## DAILY GAGE HEIGHT, IN FEET, OF ROANOKE RIVER AT CLARKSVILLE, VA., FOR 1896.

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1			8.94	2.09	0.69	0.49	0.39	-0.11	7.45	0.44	3.01
2			9.84	3.14	.64	.39	.34	-.11	8.50	.49	4.31
3			8.99	3.89	.54	.34	.29	-.01	2.96	.51	3.14
4			5.24	2.94	.44	.29	.24	+.84	1.20	.94	2.03
5			3.46	1.85	.94	.34	.22	.99	.94	2.10	1.65
6			2.84	1.73	1.59	.49	.19	.44	.79	6.42	1.53
7	8.42		2.79	1.59	1.44	4.54	.17	2.47	.72	2.37	1.45
8	6.89		2.44	1.44	.94	6.84	.14	1.30	.64	1.95	1.37
9	5.16		2.24	1.29	.94	10.54	.12	.94	.54	1.54	1.27
10	4.84		1.99	1.19	1.44	13.94	.12	.44	.49	1.24	1.19
11	3.85		1.98	1.14	1.29	13.44	.34	.29	.49	1.04	1.09
12	2.86		1.97	1.09	1.19	8.39	1.12	.09	.44	.94	1.03
13	2.37		1.92	1.04	1.14	5.14	1.24	.04	.42	1.04	.98
14	3.16		1.69	1.01	1.09	2.74	1.39	.02	.42	.99	.92
15	2.94	1.37	1.64	.94	1.09	2.06	1.44	.04	.49	.98	1.03
16	2.78	1.33	1.59	.49	1.07	1.94	1.64	.04	.44	.95	1.20
17	2.41	1.92	1.54	.44	1.04	1.86	.97	.09	.43	.94	1.63
18	1.86	2.15	1.49	.49	.94	1.74	.46	.06	.39	.72	1.35
19	1.68	2.27	1.44	.59	.84	1.64	.20	.04	.34	.69	1.20
20	1.53	3.56	1.39	1.09	.79	1.44	.14	.16	.34	.66	1.13
21	1.38	3.99	1.32	1.65	.94	1.32	.12	.40	.32	.63	1.07
22	1.33	2.79	1.37	2.59	1.04	1.26	.09	.96	.29	.63	.99
23	1.43	2.19	1.37	3.84	1.19	1.27	.09	1.24	.36	.62	.92
24	1.56	1.96	1.29	2.64	1.94	1.04	.09	.19	.39	.61	.86
25	1.64	2.19	1.37	1.64	2.49	.89	.06	.04	.44	.60	.82
26	1.54	2.27	1.94	.97	2.94	.82	.14	-.01	.41	.59	.78
27	1.43	1.96	1.86	1.79	3.14	.64	.24	-1.06	.39	.58	.76
28	1.46	1.72	1.47	2.44	1.14	.59	.09	-.08	.39	.57	.74
29	1.54	1.73	1.37	1.79	.49	.54	.04	+1.20	.39	.79	.71
30		2.86	1.24	1.29	-.01	.49	-.06	4.99	.38	1.50	.69
31		7.36		.74		.44	-.11		.41		.69

DAILY GAGE HEIGHT, IN FEET, OF ROANOKE RIVER AT CLARKSVILLE, VA., FOR 1897.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	2.75	3.60	2.25	1.60	1.15	1.00	-----	0.35	0.30	-0.31	1.00	2.20
2.....	2.75	4.10	2.12	1.55	2.48	.98	-----	.31	.20	- .31	1.50	1.85
3.....	2.74	4.92	2.05	1.00	4.72	.96	-----	.28	.00	- .35	2.12	1.63
4.....	2.74	3.55	1.93	1.70	4.30	1.03	0.65	.20	.00	- .40	1.55	1.47
5.....	2.75	2.68	2.85	1.92	2.70	1.11	.60	.14	.00	- .45	.95	1.30
6.....	2.77	3.23	4.02	2.52	2.52	1.09	.57	.10	.00	- .48	.78	1.18
7.....	2.75	6.05	4.20	2.75	3.10	1.06	.54	.08	.00	- .52	.59	1.02
8.....	2.71	11.85	4.05	2.95	2.98	1.05	.51	.08	.00	- .58	.43	.84
9.....	2.68	8.85	3.85	2.72	2.60	1.05	.66	.09	.00	- .65	.25	.70
10.....	2.65	4.25	3.35	3.55	2.28	1.02	.59	.40	.00	- .40	.12	.52
11.....	2.62	2.58	3.45	3.15	2.85	1.98	.48	.46	.00	+ .40	.05	.40
12.....	2.60	2.20	4.20	2.85	3.45	1.96	.34	.31	.00	.60	.02	.37
13.....	2.58	3.50	4.35	2.53	3.73	-----	1.15	.29	.00	1.55	- .05	.35
14.....	2.65	2.85	5.15	2.30	4.43	-----	.80	.20	.00	.66	- .10	.37
15.....	2.68	2.55	4.37	2.05	4.72	-----	.61	.14	.00	.60	- .20	.52
16.....	2.65	3.15	3.60	1.75	4.10	-----	.50	.20	.00	.53	- .24	.57
17.....	2.68	3.70	2.97	1.46	3.65	-----	.40	.28	.00	1.05	- .30	.65
18.....	3.51	2.90	3.78	1.45	3.28	-----	.48	.40	.00	1.33	- .38	1.00
19.....	4.47	2.35	3.40	1.38	2.75	-----	1.43	.59	.00	1.79	- .10	1.02
20.....	5.07	2.85	3.15	1.33	2.58	-----	1.35	.65	.00	2.30	- .13	.72
21.....	4.52	2.90	2.90	1.28	1.70	-----	1.65	.71	.00	1.00	- .13	1.25
22.....	3.66	6.07	2.77	1.20	1.57	-----	1.15	.34	.00	.25	- .14	1.85
23.....	3.06	7.75	2.50	1.15	1.33	-----	.87	.48	.00	.60	- .16	4.50
24.....	2.85	10.70	2.30	1.15	1.29	-----	.84	.40	.00	.30	- .20	2.88
25.....	1.74	12.04	2.05	1.15	1.26	-----	.51	.30	.00	.07	- .05	2.08
26.....	1.54	3.05	1.98	1.12	1.21	-----	.46	.16	.00	.28	- .02	1.68
27.....	1.24	2.65	1.83	1.08	1.18	-----	.34	.09	.05	.62	+ .17	1.35
28.....	.83	2.35	1.80	1.05	1.13	-----	.32	.07	.00	1.85	1.33	1.05
29.....	1.14	-----	1.72	1.01	1.05	-----	.78	.80	- .25	2.40	4.70	.80
30.....	1.24	-----	1.68	.95	1.02	-----	.58	.80	- .28	1.33	2.77	.70
31.....	2.85	-----	1.65	-----	1.00	-----	.45	.50	-----	1.30	-----	.57

June 13 to July 3 no reports; repairing bridge.

DAILY GAGE HEIGHT, IN FEET, OF ROANOKE RIVER AT CLARKSVILLE, VA., FOR 1898.\*

Day.	Jan.	Feb.	Day.	Jan.	Feb.	Day.	Jan.	Feb.	Day.	Jan.	Feb.
1.....	0.35	0.49	9.....	0.60	0.51	17.....	0.48	0.27	25.....	2.10	0.74
2.....	.43	.40	10.....	.42	.65	18.....	1.05	.25	26.....	3.25	.65
3.....	.39	.43	11.....	.38	.60	19.....	.70	.33	27.....	2.08	-----
4.....	.50	.39	12.....	.69	.54	20.....	.65	.33	28.....	1.63	-----
5.....	.65	.33	13.....	.50	.51	21.....	.42	.43	29.....	1.25	-----
6.....	.70	.27	14.....	.50	.49	22.....	.47	.48	30.....	.88	-----
7.....	.71	.35	15.....	.38	.38	23.....	.43	.54	31.....	.65	-----
8.....	.71	.48	16.....	.39	.34	24.....	.65	.65			-----

\*Station discontinued February 26.

RATING TABLE FOR ROANOKE RIVER AT CLARKSVILLE, VA., FOR 1896-1897.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1896.							
0.00	685	1.40	2,095	5.00	10,100	8.60	20,200
-0.10	630	1.60	2,395	5.20	10,650	8.80	20,800
-0.20	580	1.80	2,715	5.40	11,200	9.00	21,400
-0.30	535	2.00	3,060	5.60	11,750	9.20	22,000
-0.40	500	2.20	3,395	5.80	12,300	9.40	22,600
-0.50	470	2.40	3,760	6.00	12,850	9.60	23,200
-0.60	440	2.60	4,150	6.20	13,400	9.80	23,800
-0.70	410	2.80	4,600	6.40	13,950	10.00	24,400
-0.80	380	3.00	5,100	6.60	14,500	10.20	25,000
-0.90	350	3.20	5,600	6.80	15,050	10.40	25,600
-1.00	330	3.40	6,100	7.00	15,600	10.60	26,200
0.00	685	3.60	6,600	7.20	16,180	10.80	26,800
0.20	820	3.80	7,100	7.40	16,660	11.00	27,400
0.40	980	4.00	7,600	7.60	17,240	11.20	28,000
0.60	1,160	4.20	8,100	7.80	17,820	11.40	28,600
0.80	1,350	4.40	8,600	8.00	18,400	11.60	29,200
1.00	1,560	4.60	9,100	8.20	19,000	11.80	29,800
1.20	1,810	4.80	9,600	8.40	19,600	12.00	30,400
1897.							
-0.70	540	1.80	3,496	5.00	11,560	8.20	19,624
-0.60	560	2.00	4,000	5.20	12,064	8.40	20,128
-0.50	580	2.20	4,504	5.40	12,568	8.60	20,632
-0.40	600	2.40	5,008	5.60	13,072	8.80	21,136
-0.30	625	2.60	5,512	5.80	13,576	9.00	21,640
-0.20	650	2.80	6,016	6.00	14,080	9.20	22,144
-0.10	675	3.00	6,520	6.20	14,584	9.40	22,648
0.00	700	3.20	7,024	6.40	15,088	9.60	23,152
0.20	800	3.40	7,528	6.60	15,592	9.80	23,656
0.40	1,000	3.60	8,032	6.80	16,096	10.00	24,160
0.60	1,220	3.80	8,536	7.00	16,600	10.20	24,664
0.80	1,470	4.00	9,040	7.20	17,104	10.40	25,168
1.00	1,760	4.20	9,544	7.40	17,608	10.60	25,672
1.20	2,100	4.40	10,048	7.60	18,112	10.80	26,176
1.40	2,530	4.60	10,552	7.80	18,616	11.00	26,680
1.60	2,992	4.80	11,056	8.00	19,120	11.20	27,184

## ROANOKE RIVER AT RANDOLPH, VA.

This station was originally established August 27, 1900. It is located on the railroad bridge about five-eighths of a mile southwest of the Southern Railway station at Randolph.

The channel is straight for a considerable distance above and below the station and has a width at ordinary stages of about 400 feet, broken by one bridge pier. The bed is composed mainly of firm material and is quite permanent. The current is moderately rapid and has a well-distributed velocity. During flood stages the river flows under the four spans of the bridge and also through two flood channels through the railroad embankment between the bridge and Randolph station.

Discharge measurements are made from the bridge to which the gage is attached. The bridge makes an angle of about 73° with the direction of the current. The initial point for soundings is the end of the guard rail, left abutment.



During the summer of 1902 the bridge to which the gage was attached was replaced by a new one, a temporary gage, set by the observer, being used during the construction work; datum of temporary gage not known. On October 13, 1902, a new wire gage was installed. The gage heights before and after this date indicate that the datum was raised approximately 2.00 feet. The present gage, which was installed May 20, 1903, is a standard chain gage and occupies practically the same position as the wire gage which it replaced. It is attached to the upstream guard rail in the middle of the second span from the left bank. The datum is the same as that of the gage which it replaced. The length of the chain from the end of the weight to the marker is 43.13 feet. The gage is read once daily by J. E. Figg, the station agent. Bench mark No. 1 is the top of the floor beam nearest the zero of the gage scale, at a point 0.2 foot downstream from the adjacent tie. Its elevation is 41.97 feet above gage datum. Bench mark No. 2 is a copper bolt set in the capstone on the downstream side of the left abutment, about 3 feet from the end of the ties. Its elevation is 36.99 feet above gage datum.

ESTIMATED MONTHLY DISCHARGE OF ROANOKE RIVER AT CLARKSVILLE, VA.  
[Drainage area, 3,450 square miles.]

Month.	Discharge in Second-feet.			Total in Acre-feet.	Run-off.	
	Maxi- mum.	Mini- mum.	Mean.		Depth in Inches.	Second- feet per Square Mile.
1896.						
February.....	19,660	1,852	4,554	261,946	1.42	1.32
March.....	16,554	1,852	3,064	189,635	1.02	0.89
April.....	23,890	1,732	3,990	237,405	1.28	1.15
May.....	7,325	916	2,240	137,737	0.75	0.65
June.....	5,450	680	1,608	95,682	0.52	0.46
July.....	*36,000	823	3,611	222,040	1.20	1.04
August.....	2,459	635	860	52,881	0.28	0.24
September.....	3,899	645	1,150	68,425	0.37	0.33
October.....	19,900	892	1,620	99,614	0.54	0.47
November.....	14,005	1,023	1,979	117,850	0.63	0.57
December.....	5,125	1,245	2,008	123,472	0.67	0.58
1897.						
January.....	11,686	1,540	5,773	354,970	1.88	1.63
February.....	29,326	4,504	10,593	588,306	3.11	2.99
March.....	11,938	3,118	6,459	397,150	2.10	1.82
April.....	7,906	1,685	3,584	213,265	1.13	1.01
May.....	10,804	1,760	5,367	330,004	1.74	1.51
June.....	* 8,410	*1,220	* 2,301	136,920	0.72	0.65
July.....	3,118	900	1,378	84,730	0.45	0.39
August.....	1,470	720	983	60,442	0.32	0.28
September.....	900	625	705	41,951	0.22	0.20
October.....	5,008	550	1,540	94,691	0.49	0.43
November.....	10,804	600	1,640	97,587	0.52	0.46
December.....	10,300	950	2,401	147,631	0.78	0.68
The year.....	29,326	550	3,560	2,547,647	13.46	1.00

\*Approximate.

## DISCHARGE MEASUREMENTS OF ROANOKE RIVER AT RANDOLPH, VA.

Date.	Hydrographer.	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second-feet).
1900.					
Aug. 27	E. W. Myers.....	573	2.35	1.00	1,349
Oct. 31	do.....	915	2.52	2.75	2,301
1901.					
Jan. 15	E. Graves.....	1,975	3.11	*7.10	6,153
Mar. 29	E. W. Myers.....	1,782	2.85	7.17	5,091
April 23	N. C. Curtis.....	3,179	3.85	11.25	12,260
May 23	E. Graves.....	14,000	4.15	†28.20	58,000
July 19	N. C. Curtis.....	3,791	3.94	14.10	14,950
July 25	E. W. Myers.....	1,276	3.05	*4.07	3,896
1902.					
Aug. 15	B. S. Drane.....	928	2.49	*4.05	2,312
Oct. 13	do.....	2,214	2.80	9.15	6,203
Dec. 5	do.....	3,277	3.33	13.47	10,920
1903.					
Mar. 27	E. C. Murphy.....	2,454	3.21	*10.45	7,877
May 20	E. W. Myers.....	1,068	2.83	5.19	3,025
June 24	do.....	1,012	2.49	5.32	2,520
June 24	do.....	1,010	2.46	5.29	2,490
Aug. 8	B. S. Drane.....	865	2.57	4.59	2,220
Aug. 28	do.....	642	2.26	3.62	1,451
Aug. 28	do.....	652	2.25	3.61	1,468
Sept. 25	Paul & Sawyer.....	772	2.43	4.20	1,877
Dec. 3	W. C. Sawyer.....	696	2.11	3.82	1,466
1904.					
June 22	F. H. Brundage.....	885	2.37	4.47	2,049
Sept. 27	R. H. Bolster.....	468	1.68	2.70	787
Oct. 22	do.....	517	1.59	2.92	822
1905.					
Mar. 11	A. H. Horton.....	2,580	3.19	11.18	8,233
July 23	Grover and Horton.....	1,601	3.01	7.58	4,820
Sept. 7	R. H. Bolster.....	1,070	2.36	5.43	2,520
1906.					
Jan. 8	.....	735	.....	4.20	1,440

\*Gage height doubtful.

†30.2 as used for 1903 to 1905 rating table on account of a difference of approximately 2.0 feet between the 1901 and 1903 datums.

## DAILY GAGE HEIGHT, IN FEET, OF ROANOKE RIVER AT RANDOLPH, VA., FOR 1900.

Day.	Sept.	Oct.	Nov.	Dec.	Day.	Sept.	Oct.	Nov.	Dec.
1.....	1.00	1.30	2.60	3.70	17.....	6.90	2.05	2.30	3.00
2.....	1.00	1.35	2.50	3.30	18.....	3.30	1.70	2.30	3.00
3.....	.75	1.60	2.80	3.05	19.....	2.05	1.50	2.25	3.00
4.....	.70	1.50	4.40	4.75	20.....	1.60	1.45	2.30	3.05
5.....	.75	1.55	4.60	15.50	21.....	1.35	1.40	2.30	3.15
6.....	2.00	2.00	4.00	10.50	22.....	1.30	1.35	2.35	3.50
7.....	1.00	1.80	3.45	6.75	23.....	1.40	1.50	2.30	3.70
8.....	.80	1.60	3.10	5.50	24.....	1.35	6.00	2.25	5.70
9.....	.70	1.80	2.95	4.80	25.....	2.50	15.15	2.25	4.80
10.....	.50	2.00	2.75	4.35	26.....	2.00	6.10	3.10	4.00
11.....	.50	1.65	2.60	4.00	27.....	1.50	4.50	12.40	3.80
12.....	.40	1.00	2.55	3.75	28.....	1.40	3.70	6.50	3.50
13.....	.30	1.50	2.55	3.60	29.....	1.55	3.30	4.75	3.50
14.....	.30	1.55	2.50	3.40	30.....	1.40	3.00	4.00	3.30
15.....	1.00	2.05	2.45	3.30	31.....	.....	2.75	.....	3.95
16.....	9.10	2.50	2.35	3.20					

## WATER-POWERS OF NORTH CAROLINA.

DAILY GAGE HEIGHT, IN FEET, OF ROANOKE RIVER AT RANDOLPH, VA., FOR 1901-1902.

1901.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	3.95	3.55	2.90	4.00	4.90	6.30	5.50	3.40	6.10	5.90	3.35	3.40
2.....	3.75	3.30	2.85	4.50	4.70	5.70	5.15	3.35	6.00	5.20	3.35	3.40
3.....	3.40	3.40	2.85	19.00	4.50	5.20	5.00	3.25	5.40	4.70	3.35	4.20
4.....	3.20	4.30	2.85	22.60	4.35	5.00	4.20	3.10	5.10	4.30	3.35	6.10
5.....	3.00	4.70	2.80	13.00	4.15	4.90	3.80	3.70	4.80	4.00	3.35	6.20
6.....	3.10	4.30	2.80	8.50	4.10	4.70	4.80	14.40	4.70	3.90	3.30	4.90
7.....	3.10	3.80	2.75	7.40	4.00	5.30	5.50	22.60	4.50	3.75	3.30	4.00
8.....	3.10	3.70	2.70	6.30	4.10	6.20	4.30	24.80	4.40	3.75	3.30	3.80
9.....	3.05	4.15	2.90	5.60	5.00	5.70	4.30	11.30	4.30	3.70	3.30	3.70
10.....	3.05	4.40	3.65	5.10	6.00	5.10	3.90	6.80	4.10	3.65	3.30	3.90
11.....	4.00	4.30	4.10	4.70	6.70	4.30	3.30	6.60	4.00	3.65	3.30	4.50
12.....	19.40	4.00	8.00	4.40	5.55	4.10	3.20	8.10	4.00	3.65	3.30	4.30
13.....	22.30	3.75	6.00	4.35	4.55	3.80	4.20	13.60	3.90	7.50	3.40	4.00
14.....	10.40	3.50	4.80	9.20	4.00	4.00	6.30	8.70	3.90	6.40	3.35	3.80
15.....	7.10	3.40	4.25	12.60	3.80	3.95	19.20	22.00	3.80	4.80	3.30	9.00
16.....	6.00	3.55	3.85	9.20	3.65	3.90	18.70	24.00	3.70	4.00	3.30	19.50
17.....	5.60	3.40	3.60	6.70	3.60	10.00	9.90	8.00	5.20	3.70	3.25	10.00
18.....	5.15	3.40	3.40	5.80	3.80	8.50	8.20	14.60	7.70	3.60	3.30	6.50
19.....	4.60	3.35	3.30	5.30	3.75	6.50	14.15	11.60	7.40	3.50	3.30	5.50
20.....	4.05	3.30	3.20	9.80	4.10	5.60	11.40	9.10	5.30	3.50	3.30	5.10
21.....	4.00	3.10	3.55	19.60	5.50	5.60	7.50	7.60	4.50	3.45	3.25	4.60
22.....	3.95	2.95	4.75	19.75	22.00	6.70	6.10	6.10	4.20	3.45	3.25	4.30
23.....	4.00	2.95	4.05	11.30	28.20	5.40	5.40	6.60	3.90	3.45	3.90	4.40
24.....	3.90	2.80	3.55	8.70	22.00	5.20	4.85	8.70	3.90	3.40	5.20	4.50
25.....	4.00	2.80	3.60	7.80	9.80	5.90	4.50	10.10	3.80	3.35	6.20	5.20
26.....	3.90	2.90	7.70	6.85	9.10	5.00	4.20	9.40	3.70	3.35	4.70	6.20
27.....	3.60	2.95	13.50	6.30	9.65	8.30	4.15	19.00	3.50	3.35	4.00	8.70
28.....	3.55	3.00	9.60	5.80	12.80	6.20	4.60	20.00	3.10	3.35	3.60	8.90
29.....	3.50		6.70	5.40	11.00	4.65	3.80	9.00	6.70	3.35	3.50	13.20
30.....	3.40		5.50	5.10	8.30	6.15	3.60	7.70	7.30	3.35	3.40	32.00
31.....	3.55		4.90		7.00		3.40	6.80		3.35		28.00
1902.												
1.....	19.00	10.20	23.70	7.50	5.50	3.90	5.10	3.70	2.30	4.20	4.20	9.00
2.....	10.50	12.50	21.20	6.80	5.10	3.90	5.00	5.10	2.30	4.00	4.00	11.50
3.....	8.90	17.50	14.20	6.30	6.40	3.90	4.20	4.40	3.20	3.70	3.85	16.00
4.....	7.90	11.50	9.90	5.90	7.00	3.80	3.80	3.90	3.00	3.70	3.80	13.40
5.....	6.90	7.90	10.60	6.00	5.50	3.85	3.70	3.50	3.70	8.60	3.80	13.70
6.....	6.10	6.40	10.90	6.50	5.40	3.70	3.50	3.90	3.30	23.00	3.80	15.05
7.....	6.00	6.00	8.70	5.80	5.30	3.60	5.30	4.30	3.00	20.00	4.10	10.20
8.....	6.05	6.20	8.00	10.30	6.70	3.90	4.80	3.80	2.60	5.60	4.10	8.00
9.....	5.90	5.70	8.30	11.20	6.00	3.90	4.30	3.80	4.00	5.10	4.10	6.90
10.....	5.80	5.00	8.40	8.40	5.50	3.70	4.55	3.50	3.00	4.50	3.80	6.10
11.....	5.70	4.95	7.70	7.10	5.20	3.60	4.60	3.90	3.40	5.00	3.75	5.80
12.....	5.50	4.90	7.30	6.60	4.80	3.50	3.60	3.30	3.00	10.00	3.70	5.55
13.....	4.90	4.90	6.90	6.20	4.80	3.40	3.40	3.05	2.70	8.80	3.70	6.20
14.....	4.50	4.90	6.60	6.00	4.70	3.50	3.10	3.60	2.50	6.00	3.65	6.40
15.....	4.50	4.90	6.30	6.10	4.70	6.00	3.00	3.80	2.50	5.20	3.65	6.20
16.....	4.90	4.85	6.80	5.90	4.60	11.10	2.80	7.40	2.50	4.70	3.60	6.50
17.....	4.90	4.90	14.30	5.80	4.50	18.30	2.60	4.30	2.50	4.40	3.50	9.20
18.....	4.40	4.80	10.30	5.60	5.00	8.10	2.50	3.70	2.50	4.20	3.60	10.60
19.....	4.75	4.60	8.30	5.50	4.70	5.60	2.50	3.30	2.50	4.10	5.10	8.10
20.....	4.70	4.70	7.30	5.40	4.65	4.70	2.60	2.70	2.50	3.90	5.00	7.00
21.....	5.20	5.10	6.75	5.30	4.70	4.50	2.80	2.70	2.50	3.80	5.40	6.40
22.....	8.50	9.00	6.40	5.20	4.70	4.10	3.50	2.70	2.80	3.75	5.00	8.00
23.....	8.50	9.50	6.20	5.15	4.75	4.00	3.00	2.70	2.80	3.70	4.50	8.00
24.....	6.50	11.50	6.00	5.10	4.75	3.90	2.80	2.50	2.70	3.70	4.30	7.00
25.....	5.40	19.20	5.80	5.00	5.60	3.50	2.70	2.40	2.70	3.65	6.00	6.30
26.....	5.40	26.50	5.65	4.90	4.70	4.20	2.60	2.50	2.70	3.60	11.00	5.85
27.....	7.60	24.00	5.50	4.90	4.60	4.50	2.60	3.30	4.10	3.60	11.40	5.20
28.....	10.20	20.20	5.50	4.80	4.40	4.60	2.50	2.70	4.40	8.10	8.10	4.90
29.....	10.20		10.60	6.90	4.20	4.50	2.50	3.30	3.40	6.70	7.00	4.70
30.....	7.70		12.20	6.50	4.10	5.60	2.40	2.70	3.00	5.00	7.00	5.50
31.....	7.70		9.00		4.00		3.90	2.50		4.40		5.40

MEAN DAILY GAGE HEIGHT, IN FEET, OF ROANOKE RIVER AT RANDOLPH, VA., FOR 1933-1904.

1903.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	5.10	7.70	18.80	15.70	7.40	6.60	7.90	4.40	10.60	4.10	4.10	3.80
2.....	5.60	6.90	12.30	11.30	7.00	6.40	6.80	4.70	9.10	3.90	4.30	3.90
3.....	19.90	6.55	9.20	9.70	7.00	6.10	6.30	5.10	5.70	3.80	4.20	3.80
4.....	18.00	10.70	8.60	10.90	7.00	5.90	5.90	5.30	4.50	3.70	4.50	3.90
5.....	16.00	13.00	7.80	10.20	6.90	6.40	5.70	5.10	4.30	3.90	4.80	4.10
6.....	11.20	11.10	7.50	8.90	6.70	6.80	5.50	4.90	4.40	4.20	5.00	4.00
7.....	9.10	8.30	7.80	8.40	6.50	8.90	5.60	4.70	4.60	4.90	4.90	4.20
8.....	8.20	8.10	7.90	13.00	6.40	11.10	5.30	4.50	4.50	6.60	4.60	4.10
9.....	7.20	8.10	9.40	13.40	6.10	7.60	5.00	4.30	4.40	7.30	4.40	4.40
10.....	6.60	7.60	10.20	11.50	6.10	8.40	4.70	4.40	4.20	6.40	4.10	4.20
11.....	7.80	7.70	9.00	9.10	6.00	9.40	4.40	4.20	4.30	5.60	3.90	4.00
12.....	7.60	13.00	9.40	8.30	6.00	6.90	4.60	4.30	3.80	5.30	3.80	4.10
13.....	6.70	11.00	9.70	9.60	5.90	5.60	4.70	4.40	4.30	4.90	3.70	3.90
14.....	6.00	8.80	9.40	13.20	5.90	5.80	5.20	4.30	4.60	4.70	3.90	4.20
15.....	5.70	8.00	8.60	12.80	5.80	5.70	5.40	4.20	5.40	4.90	4.10	4.10
16.....	5.80	8.40	8.00	11.90	5.60	5.40	5.30	4.60	7.80	5.10	4.20	3.80
17.....	5.80	22.60	7.60	9.80	5.50	5.50	5.00	5.00	8.50	4.80	4.00	4.20
18.....	5.80	26.20	7.20	8.90	5.40	5.40	5.10	5.50	15.30	4.70	3.90	4.40
19.....	5.55	16.80	6.90	7.40	5.30	5.10	4.70	0.30	7.90	4.60	3.80	4.60
20.....	5.20	10.10	6.75	7.50	5.20	4.90	4.20	5.90	6.80	4.40	3.90	4.80
21.....	7.10	8.90	9.40	7.35	5.10	5.00	4.30	5.60	6.30	4.30	4.00	4.60
22.....	10.70	8.40	21.80	7.20	5.20	5.20	4.50	5.20	6.10	4.20	4.10	4.50
23.....	9.00	7.80	24.00	7.40	5.30	5.00	4.40	4.90	5.40	4.00	4.20	4.60
24.....	7.50	7.40	26.30	7.50	5.50	5.10	4.20	4.80	4.90	3.90	4.40	4.80
25.....	6.70	7.10	22.80	7.70	5.80	5.20	4.00	4.50	4.20	4.10	4.20	4.90
26.....	6.30	6.80	12.90	7.90	5.70	6.40	3.90	4.10	4.00	4.20	4.10	4.70
27.....	6.00	6.50	10.20	9.00	5.90	8.10	3.70	3.80	4.50	4.10	4.20	4.60
28.....	10.30	11.00	9.40	11.45	6.20	11.90	3.80	3.40	4.60	4.20	3.90	4.40
29.....	13.40	-----	8.60	9.80	6.40	10.50	3.90	3.70	4.30	4.00	3.80	4.50
30.....	10.00	-----	13.40	8.60	6.50	9.60	4.00	12.30	4.00	3.90	3.70	4.30
31.....	8.60	-----	19.30	-----	6.80	-----	4.20	11.40	-----	3.80	-----	4.40
1904.												
1.....	4.5	3.9	5.4	4.5	4.9	11.8	6.2	5.9	4.6	2.7	2.9	3.4
2.....	4.6	4.2	5.2	4.4	5.1	12.2	5.8	6.0	4.8	2.8	2.8	3.7
3.....	4.5	4.4	5.0	4.3	5.0	8.6	5.6	6.2	4.9	2.9	2.7	3.9
4.....	4.4	4.8	5.1	4.4	5.2	6.9	5.4	6.4	4.7	3.0	2.8	3.8
5.....	4.5	5.2	5.2	4.5	5.1	5.6	4.2	7.9	4.5	2.9	2.9	3.7
6.....	4.6	7.1	5.0	4.6	5.1	5.4	4.3	8.2	4.6	3.1	3.0	3.8
7.....	4.4	7.4	5.4	4.5	5.4	5.2	3.9	6.8	4.4	2.9	3.1	3.9
8.....	4.2	7.2	5.6	4.4	5.6	5.1	3.6	5.5	4.2	2.8	3.0	3.9
9.....	4.0	6.9	5.9	4.3	5.8	4.9	3.5	6.6	3.9	2.7	3.2	4.2
10.....	4.1	6.6	6.1	4.4	6.0	5.0	3.6	9.4	4.0	2.9	3.6	4.1
11.....	4.3	6.2	6.2	4.4	6.2	4.8	3.4	9.2	4.1	2.8	3.9	4.2
12.....	4.5	5.6	6.4	4.5	5.8	4.9	3.5	5.6	4.6	2.7	4.3	4.4
13.....	4.4	5.1	6.2	4.4	5.4	5.2	3.6	4.5	5.8	2.6	4.9	4.8
14.....	4.7	4.6	5.9	4.5	4.9	4.7	3.7	4.2	6.4	2.7	4.7	4.5
15.....	4.8	4.8	5.7	4.7	4.3	4.9	3.8	3.9	6.1	2.6	4.6	4.6
16.....	4.9	5.1	5.6	4.8	5.7	5.1	3.6	3.6	5.4	2.7	4.3	4.4
17.....	4.6	5.3	5.5	4.6	6.9	5.3	3.5	3.5	4.2	2.6	3.7	4.2
18.....	4.4	6.1	5.2	4.4	8.4	5.0	3.3	3.7	4.1	2.5	3.3	4.1
19.....	4.2	6.8	5.0	4.3	7.2	5.1	3.1	3.9	3.8	2.6	3.1	3.8
20.....	3.8	7.4	4.8	4.1	6.5	5.3	3.2	4.1	3.6	2.7	3.2	3.7
21.....	4.2	8.2	5.0	4.0	5.6	5.5	3.0	4.2	3.7	3.4	3.3	3.9
22.....	4.8	10.4	5.3	3.9	5.4	5.2	2.8	4.4	3.4	2.9	3.2	4.3
23.....	5.3	9.6	5.6	3.8	5.5	5.2	2.7	4.3	3.1	2.8	3.1	4.8
24.....	5.4	8.2	5.4	3.9	5.3	5.4	3.3	4.5	3.0	2.7	2.9	5.2
25.....	5.2	6.8	5.1	3.8	4.9	5.3	3.9	4.6	2.8	2.7	3.0	5.1
26.....	4.9	6.2	4.9	5.9	4.6	5.5	5.8	4.8	2.9	2.8	3.1	4.9
27.....	4.6	5.8	4.7	7.1	4.4	5.7	7.6	4.5	2.7	2.9	3.0	4.7
28.....	4.3	5.4	4.5	6.9	4.2	5.8	8.1	4.7	2.9	2.8	3.2	4.5
29.....	4.0	5.3	4.6	5.7	4.0	6.7	7.2	4.9	2.8	2.7	3.1	4.2
30.....	3.9	-----	4.5	4.8	3.8	6.4	6.7	5.2	2.8	2.8	3.3	4.3
31.....	3.8	-----	4.4	-----	6.9	-----	5.8	5.1	-----	2.7	-----	3.9

MEAN DAILY GAGE HEIGHT, IN FEET, OF ROANOKE RIVER AT RANDOLPH, VA., FOR 1905.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	3.7		9.8	4.3	4.2	6.7	7.1	5.2	5.2	3.3	3.45	3.95
2.....	3.7		9.2	4.1	4.1	6.5	7.9	4.9	6.5	3.45	3.35	4.15
3.....	3.8		8.6	4.2	4.3	6.0	8.4	4.7	19.93	3.45	3.4	4.25
4.....	4.3		7.2	4.4	4.4	4.4	8.9	4.5	15.03	3.4	3.45	4.35
5.....	4.1		7.4	5.2	4.2	4.5	9.5	4.4	9.8	3.35	3.45	4.5
6.....	3.8		7.6	8.2	4.1	4.3	12.4	5.03	7.47	3.45	3.6	4.75
7.....	10.0		7.8	7.6	4.0	4.2	14.8	5.73	5.63	3.35	3.45	4.8
8.....	12.9		7.9	6.9	4.2	4.4	12.3	6.33	5.4	3.5	3.35	6.75
9.....	8.0		7.7	6.2	4.3	4.2	9.4	6.67	5.43	3.65	3.45	7.0
10.....	5.5		8.0	5.6	4.5	3.9	7.0	7.57	4.9	3.	3.55	4.65
11.....	5.0		11.07	4.8	7.8	3.6	8.2	7.73	4.47	3.75	3.55	4.75
12.....	5.1		11.6	4.9	10.6	3.6	10.01	8.57	4.17	4.15	3.6	4.9
13.....	10.1		11.4	5.4	11.8	3.5	15.45	8.4	4.27	5.6	3.45	4.75
14.....	9.7		10.9	6.2	12.0	3.6	21.6	8.1	4.27	6.05	3.6	4.75
15.....	7.0		9.8	6.4	10.8	3.5	12.78	7.73	4.23	5.55	3.45	4.65
16.....	5.6		8.4	5.9	9.7	3.7	8.41	7.37	4.23	4.9	3.45	4.85
17.....	4.7		6.9	5.8	8.85	3.6	8.81	6.43	4.2	3.7	3.55	5.15
18.....	5.0		6.2	5.4	6.85	3.7	7.95	6.07	4.27	3.65	3.65	5.2
19.....	4.9		6.1	5.1	7.0	3.6	6.78	5.77	4.03	3.5	3.55	5.4
20.....	4.8		5.7	4.9	6.0	3.5	5.88	5.7	3.87	3.5	3.55	5.65
21.....	4.5		5.8	4.7	5.9	3.7	5.48	5.5	3.77	3.65	3.45	5.55
22.....	4.3	10.5	5.6	4.4	5.8	3.6	5.21	5.2	3.87	3.65	3.55	5.45
23.....	4.1	11.9	5.4	4.2	5.6	3.5	8.48	4.37	3.7	3.65	3.55	5.65
24.....	3.8	12.1	5.2	4.0	5.5	12.0	10.05	4.17	3.5	3.45	3.65	13.35
25.....	3.5	11.4	5.1	3.9	5.7	11.8	6.91	4.1	3.17	3.6	3.55	21.85
26.....	3.2	11.0	5.3	4.3	5.8	9.6	6.51	4.3	3.17	3.9	3.65	16.8
27.....	3.3	10.8	5.4	4.2	6.0	8.8	5.85	4.23	3.33	3.75	3.65	12.05
28.....	3.2	10.2	5.2	4.1	8.3	8.3	5.28	4.33	3.3	3.65	3.75	10.0
29.....	3.4		4.9	4.2	7.8	7.6	5.08	4.43	3.33	3.55	3.85	8.3
30.....	3.4		4.6	4.3	7.6	6.6	5.28	4.47	3.47	3.65	3.75	8.1
31.....	3.4		4.4		6.9		5.38	4.73		3.6		8.15

NOTE.—River frozen over January 28 to February 21.

DAILY GAGE HEIGHT, IN FEET, OF ROANOKE RIVER AT RANDOLPH, VA., FOR 1906.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.
1.....	10.3	11.5	5.75	9.85	4.65	5.6	5.95	8.5
2.....	8.65	10.1	5.75	7.95	4.8	5.4	5.65	6.55
3.....	6.6	7.5	5.6	7.15	4.9	5.4	5.3	6.4
4.....	12.9	6.2	5.75	6.75	4.8	5.4	5.05	6.85
5.....	23.6	6.2	5.85	6.45	4.65	5.6	4.85	7.1
6.....	19.8	6.35	5.9	6.4	4.85	5.5	4.75	7.3
7.....	7.65	6.3	6.15	6.15	5.15	5.45	4.75	7.1
8.....	6.7	6.25	6.0	5.95	5.7	5.15	4.55	6.9
9.....	6.75	6.25	5.85	6.35	6.05	5.25	4.55	6.7
10.....	6.9	7.05	5.75	7.5	5.9	5.35	4.85	7.4
11.....	6.85	6.85	5.85	8.95	5.55	5.1	5.25	7.5
12.....	6.95	6.65	5.85	9.15	5.5	5.15	5.8	-----
13.....	7.15	6.25	5.85	8.65	5.0	5.05	5.9	-----
14.....	7.25	5.7	5.75	7.3	5.05	4.95	5.65	-----
15.....	6.75	6.05	5.65	8.25	4.9	5.2	5.45	-----
16.....	6.55	5.85	5.65	8.2	4.85	5.2	5.25	-----
17.....	6.35	5.65	5.85	7.5	4.65	5.25	4.75	-----
18.....	6.3	5.35	8.85	7.35	4.75	5.35	4.45	-----
19.....	5.85	5.35	7.7	7.35	4.65	5.65	4.25	-----
20.....	5.4	5.35	13.0	7.4	4.65	5.15	4.4	-----
21.....	5.85	5.25	11.0	7.0	4.45	7.2	5.05	-----
22.....	5.85	5.35	9.1	6.75	4.45	9.35	5.55	-----
23.....	5.65	5.15	7.75	6.45	4.2	6.95	6.5	-----
24.....	5.75	4.95	7.05	6.45	4.1	5.1	6.15	-----
25.....	5.6	4.95	6.8	6.3	3.9	7.75	5.3	-----
26.....	5.8	4.85	6.75	5.95	4.1	7.4	4.6	-----
27.....	6.05	5.15	6.75	5.65	4.45	6.65	4.55	-----
28.....	10.6	5.35	7.15	5.6	5.75	6.35	4.25	-----
29.....	11.55	-----	7.35	5.25	8.9	6.65	4.5	-----
30.....	12.4	-----	8.75	5.0	8.3	6.25	7.45	-----
31.....	12.5	-----	15.6	-----	6.55	-----	7.75	-----

NOTE.—Discharge probably unaffected by ice.

RATING TABLE FOR ROANOKE RIVER AT RANDOLPH, VA., FROM SEPTEMBER 1, 1900, TO DECEMBER 31, 1901.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
0.40	1,145	3.20	2,600	6.00	5,060	10.00	9,750
0.60	1,205	3.40	2,830	6.20	5,280	10.50	10,400
0.80	1,270	3.60	2,980	6.40	5,490	11.00	11,060
1.00	1,350	3.80	3,140	6.60	5,700	11.50	11,750
1.20	1,430	4.00	3,300	6.80	5,920	12.00	12,500
1.40	1,515	4.20	3,460	7.00	6,150	12.50	13,250
1.60	1,615	4.40	3,620	7.20	6,380	13.00	14,000
1.80	1,730	4.60	3,780	7.40	6,610	13.50	14,850
2.00	1,850	4.80	3,940	7.60	6,840	14.00	15,750
2.20	1,990	5.00	4,100	7.80	7,070	14.50	16,650
2.40	2,130	5.20	4,270	8.00	7,300	15.00	17,600
2.60	2,270	5.40	4,450	8.50	7,900		
2.80	2,410	5.60	4,640	9.00	8,500		
3.00	2,550	5.80	4,840	9.50	9,125		

The above table is strictly applicable only for open-channel conditions. It is not well defined.

RATING TABLE FOR ROANOKE RIVER AT RANDOLPH, VA., FROM JANUARY 1 TO OCTOBER 12, 1902.

2.2	1,490	4.4	2,720	6.6	4,570	10.0	8,500
2.4	1,580	4.6	2,880	6.8	4,760	10.5	9,150
2.6	1,670	4.8	3,040	7.0	4,950	11.0	9,800
2.8	1,760	5.0	3,200	7.2	5,190	11.5	10,600
3.0	1,850	5.2	3,360	7.4	5,370	12.0	11,400
3.2	1,960	5.4	3,520	7.6	5,580	12.5	12,200
3.4	2,070	5.6	3,680	7.8	5,790	13.0	13,000
3.6	2,180	5.8	3,840	8.0	6,000	13.5	13,900
3.8	2,290	6.0	4,000	8.5	6,625	14.0	14,800
4.0	2,400	6.2	4,190	9.0	7,250	14.5	15,800
4.2	2,560	6.4	4,380	9.5	7,875	15.0	16,800

The above table is strictly applicable only for open-channel conditions. It is not well defined.

RATING TABLE FOR ROANOKE RIVER AT RANDOLPH, VA., FROM JANUARY 1 TO DECEMBER 31, 1903.

3.4	1,310	5.4	2,830	7.8	4,860	11.8	9,080
3.5	1,370	5.5	2,910	8.0	5,040	12.0	9,320
3.6	1,435	5.6	2,990	8.2	5,240	12.2	9,560
3.7	1,500	5.7	3,070	8.4	5,440	12.4	9,800
3.8	1,570	5.8	3,150	8.6	5,640	12.6	10,040
3.9	1,640	5.9	3,230	8.8	5,840	12.8	10,280
4.0	1,715	6.0	3,310	9.0	6,040	13.0	10,520
4.1	1,790	6.1	3,390	9.2	6,240	13.2	10,760
4.2	1,870	6.2	3,470	9.4	6,440	13.4	11,000
4.3	1,950	6.3	3,550	9.6	6,640	13.6	11,240
4.4	2,030	6.4	3,630	9.8	6,840	13.8	11,480
4.5	2,110	6.5	3,710	10.0	7,060	14.0	11,720
4.6	2,190	6.6	3,790	10.2	7,280	14.2	11,960
4.7	2,270	6.7	3,870	10.4	7,500	14.4	12,200
4.8	2,350	6.8	3,950	10.6	7,720	14.6	12,460
4.9	2,430	6.9	4,050	10.8	7,940	14.8	12,720
5.0	2,510	7.0	4,140	11.0	8,160	15.0	12,980
5.1	2,590	7.2	4,320	11.2	8,380	15.5	13,680
5.2	2,670	7.4	4,500	11.4	8,600	16.0	14,400
5.3	2,750	7.6	4,680	11.6	8,840		

Tangent above 15.8 feet, gage height; differences above this point, 150 per tenth.

RATING TABLE FOR ROANOKE RIVER AT RANDOLPH, VA., FROM JANUARY 1 TO DECEMBER 31, 1904.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
2.50	590	3.90	1,620	5.30	2,775	7.40	4,720
2.60	655	4.00	1,700	5.40	2,860	7.60	4,920
2.70	725	4.10	1,780	5.50	2,950	7.80	5,120
2.80	795	4.20	1,860	5.60	3,040	8.00	5,320
2.90	865	4.30	1,940	5.70	3,130	8.50	5,820
3.00	935	4.40	2,020	5.80	3,220	9.00	6,340
3.10	1,005	4.50	2,100	5.90	3,310	9.50	6,865
3.20	1,080	4.60	2,180	6.00	3,400	10.00	7,390
3.30	1,155	4.70	2,265	6.20	3,580	10.50	7,915
3.40	1,230	4.80	2,350	6.40	3,770	11.00	8,440
3.50	1,305	4.90	2,435	6.60	3,960	11.50	8,980
3.60	1,380	5.00	2,520	6.80	4,150	12.00	9,530
3.70	1,460	5.10	2,605	7.00	4,340		
3.80	1,540	5.20	2,690	7.20	4,530		

The above table is applicable only for open-channel conditions. It is based upon 14 discharge measurements made during 1902 to 1904, inclusive. It is well defined between gage heights 2.70 feet and 4.60 feet.

STATION RATING TABLE FOR ROANOKE RIVER AT RANDOLPH, VA., FROM JANUARY 1 TO DECEMBER 31, 1905.

3.00	920	4.50	2,030	5.90	3,205	7.60	4,780
3.10	985	4.60	2,110	6.00	3,290	7.80	4,980
3.20	1,050	4.70	2,190	6.10	3,380	8.00	5,180
3.30	1,120	4.80	2,270	6.20	3,470	8.50	5,680
3.40	1,190	4.90	2,355	6.30	3,560	9.00	6,190
3.50	1,260	5.00	2,440	6.40	3,650	9.50	6,715
3.60	1,330	5.10	2,525	6.50	3,740	10.00	7,250
3.70	1,406	5.20	2,610	6.60	3,830	10.50	7,800
3.80	1,480	5.30	2,695	6.70	3,920	11.00	8,350
3.90	1,555	5.40	2,780	6.80	4,010	11.50	8,900
4.00	1,630	5.50	2,865	6.90	4,105	12.00	9,470
4.10	1,710	5.60	2,950	7.00	4,200	12.50	10,050
4.20	1,790	5.70	3,035	7.20	4,390	13.00	10,650
4.30	1,870	5.80	3,120	7.40	4,580	13.50	11,250
4.40	1,950						

The above table is applicable only for open-channel conditions. It is based on discharge measurements made during 1902-1905. It is fairly well defined between gage heights 2.6 feet and 14 feet.

STATION RATING TABLE FOR ROANOKE RIVER AT RANDOLPH, VA., FOR 1906.

3.90	1,300	.20	2,280	.50	3,415	.60	6,530
4.00	1,370	.30	2,360	.60	3,510	.80	5,750
.10	1,440	.40	2,445	.70	3,605	9.00	5,970
.20	1,510	.50	2,530	.80	3,700	.20	6,190
.30	1,580	.60	2,615	.90	3,800	.40	6,410
.40	1,655	.70	2,700	7.00	3,900	.60	6,630
.50	1,730	.80	2,785	.20	4,100	.80	6,850
.60	1,805	.90	2,870	.40	4,300	10.00	7,080
.70	1,880	6.00	2,960	.60	4,500	.20	-----
.80	1,960	.10	3,050	.80	4,700	11.00	8,260
.90	2,040	.20	3,140	8.00	4,900	12.00	9,460
5.00	2,120	.30	3,230	.20	5,110	13.00	10,660
.10	2,200	.40	3,320	.40	5,320	14.00	11,900

The above table is applicable only for open-channel conditions. It is based upon discharge measurements made during 1905-1908 and the form of former curves. It is fairly well defined. Above gage height 14.0 feet this discharge table is the same as that for 1905.



ESTIMATED MONTHLY DISCHARGE OF ROANOKE RIVER AT RANDOLPH, VA.  
 (Drainage area, 3,076 square miles.)

Month.	Discharge in Second-feet.			Run-off.	
	Maxi- mum.	Mini- mum.	Mean.	Second- feet per Square Mile.	Depth in Inches.
1900.					
September.....	8,625	1,120	1,878	0.61	0.68
October.....	17,900	1,350	2,597	.84	.97
November.....	13,100	2,025	2,938	.96	1.07
December.....	18,600	2,550	3,944	1.28	1.48
1901.					
January.....	35,980	2,550	5,362	1.74	2.01
February.....	3,860	2,410	2,948	.98	1.02
March.....	14,850	2,340	4,000	1.30	1.50
April.....	36,910	3,580	9,620	3.13	3.49
May.....	37,940	2,980	8,148	2.65	3.16
June.....	9,750	3,140	4,759	1.55	1.73
July.....	30,980	2,690	6,259	2.03	2.34
August.....	45,100	2,620	13,185	4.29	4.94
September.....	6,955	2,620	3,998	1.30	1.45
October.....	6,725	2,795	3,346	1.09	1.26
November.....	5,260	2,725	2,984	.97	1.08
December.....	75,100	2,830	9,621	3.13	3.61
The year.....	75,100	2,340	6,186	2.01	27.59
†1902.					
January.....	26,200	2,800	5,388	1.75	2.02
February.....	51,050	2,880	10,290	3.35	3.49
March.....	40,500	3,600	8,616	2.80	3.23
April.....	10,120	3,040	4,308	1.43	1.60
May.....	4,950	2,400	3,250	1.06	1.22
June.....	24,450	2,070	3,656	1.19	1.33
July.....	3,440	1,580	2,149	.70	.81
August.....	5,370	1,580	2,198	.71	.82
September.....	2,720	1,535	1,844	.60	.67
October.....	38,150	1,435	4,845	1.58	1.82
November.....	8,600	1,370	2,551	.83	.92
December.....	14,550	2,270	5,349	1.74	2.01
The year.....	51,050	1,370	4,545	1.48	19.94
1903.					
January.....	23,850	2,590	6,123	1.99	2.29
February.....	44,200	3,710	8,575	2.79	2.90
March.....	44,550	3,915	11,010	3.58	4.13
April.....	14,050	4,320	7,041	2.29	2.55
May.....	4,500	2,590	3,370	1.10	1.27
June.....	9,200	2,430	4,147	1.35	1.51
July.....	4,950	1,500	2,445	.79	.91
August.....	9,680	1,310	2,712	.88	1.01
September.....	13,420	1,570	3,273	1.06	1.18
October.....	4,410	1,500	2,191	.71	.82
November.....	2,510	1,500	1,841	.60	.67
December.....	2,430	1,570	1,940	.63	.73
The year.....	44,550	1,310	4,556	1.48	19.97

ESTIMATED MONTHLY DISCHARGE OF ROANOKE RIVER AT RANDOLPH, VA., FOR 1904.  
[Drainage area, 3,076 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maximum.	Minimum.	Mean.	Second-feet per Square Mile.	Depth in Inches.
January.....	2,860	1,540	2,087	0.678	0.782
February.....	7,810	1,620	3,667	1.19	1.28
March.....	3,770	2,020	2,787	.906	1.04
April.....	4,435	1,540	2,224	.723	.807
May.....	5,720	1,540	2,930	.965	1.10
June.....	9,750	2,265	3,397	1.10	1.23
July.....	5,420	725	2,117	.668	.793
August.....	6,760	1,305	2,899	.942	1.00
September.....	3,770	725	1,801	.586	.654
October.....	1,230	590	787	.256	.295
November.....	2,435	725	889	.289	.322
December.....	2,690	1,230	1,881	.612	.706
The year.....	9,750	590	2,290	.744	10.10

ESTIMATED MONTHLY DISCHARGE OF ROANOKE RIVER AT RANDOLPH, VA., FOR 1905.  
[Drainage area, 3,076 square miles.]

January.....	10,530	1,050	2,773	0.901	1.04
February (22-28).....	9,585	7,470	8,497	2.76	.718
March.....	9,010	1,950	4,601	1.50	1.73
April.....	5,380	1,555	2,576	.837	.934
May.....	9,470	1,630	3,974	1.29	1.49
June.....	9,470	1,260	2,891	.940	1.05
July.....	28,960	2,508	6,485	2.11	2.43
August.....	5,750	1,710	3,083	1.00	1.15
September.....	23,940	1,030	3,213	1.04	1.16
October.....	3,335	1,120	1,528	.497	.573
November.....	1,518	1,155	1,292	.420	.460
December.....	29,740	1,592	4,733	1.54	1.78

NOTE.—River frozen over January 28 to February 21. No correction made in January estimates.

MONTHLY DISCHARGE OF ROANOKE RIVER AT RANDOLPH, VA., FOR 1906.  
[Drainage area, 3,080 square miles.]

January.....	35,200	2,440	6,200	2.01	2.32
February.....	8,860	2,000	3,220	1.05	1.09
March.....	14,000	2,620	4,210	1.37	1.58
April.....	6,910	2,120	3,980	1.29	1.44
May.....	5,860	1,300	2,300	.747	.86
June.....	6,360	2,080	2,880	.935	1.04
July.....	4,650	1,540	2,360	.766	.88
August 1-11.....	5,420	3,320	4,020	1.31	.54

NOTE.—Station discontinued August 12, 1906.

## DAN RIVER AT CLARKSVILLE, VA.

This station was located at the Southern Railway bridge, a short distance above the junction with Roanoke River. As noted for the Roanoke River Station, the gage readings are liable to be affected by backwater. It was established on December 4, 1895, and abandoned in 1898.

## DISCHARGE MEASUREMENTS OF DAN RIVER AT CLARKSVILLE, VA.

Date.	Hydrographer.	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second-feet).
1895.					
Oct. 2	C. C. Babb	591	1.31	0.38	773
Oct. 28	do.	719	1.44	0.65	1,032
Dec. 5	do.	865	1.60	1.12	1,382
1896.					
Apr. 22	E. W. Myers	1,209	1.89	2.43	2,291
May 5*	do.	1,465	1.83	2.30	2,694
May 26	do.	1,465	1.47	2.30	2,155
July 15	do.	1,932	2.39	3.50	4,626
Sept. 15	A. P. Davis	953	1.50	1.70	1,433
1897.					
Feb. 25	E. W. Myers	7,443	3.49	12.33	26,020
Mar. 18	do.	2,867	2.70	4.20	7,755
Sept. 29	do.	797	1.07	0.10	856
1898.					
Jan. 8	E. W. Myers	1,138	1.76	1.05	2,009

\*For measurement of May 5, 1896, the channel had cut badly, averaging almost all way across a cut of 1 foot.

## DAILY GAGE HEIGHT, IN FEET, OF DAN RIVER AT CLARKSVILLE, VA., FOR 1896.

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1			9.47	2.62	1.22	1.02	0.92	0.42	7.92	0.97	3.53
2			10.37	3.67	1.17	.92	.87	.40	8.97	1.02	4.82
3			9.52	4.42	1.07	.87	.82	.52	3.47	1.04	3.65
4			5.77	3.47	.97	.82	.77	1.37	1.72	1.47	2.55
5			3.99	2.38	1.47	.87	.75	1.52	1.47	2.62	2.17
6			3.37	2.26	2.12	1.02	.72	.97	1.32	6.92	2.05
7	8.95		3.32	2.12	1.97	4.02	.70	2.97	1.25	4.97	1.97
8	7.42		2.97	1.97	1.47	6.02	.67	1.82	1.17	2.47	1.89
9	5.75		2.77	1.82	1.47	9.12	.65	1.47	1.07	2.17	1.90
10	5.42		2.52	1.72	1.97	13.97	.65	.97	1.02	1.77	1.72
11	4.40		2.51	1.67	1.82	14.07	.87	.82	1.02	1.57	1.62
12	3.42		2.50	1.62	1.72	8.87	1.65	.62	.97	1.47	1.56
13	2.92		2.45	1.57	1.67	5.62	1.77	.57	.95	1.57	1.51
14	3.70		2.22	1.54	1.62	3.22	1.92	.55	.95	1.52	1.43
15	3.47	1.90	2.17	1.47	1.62	2.67	1.97	.57	1.02	1.50	1.53
16	3.32	1.87	2.12	1.02	1.60	2.47	2.12	.57	.97	1.48	1.72
17	2.97	2.45	2.07	.97	1.57	2.39	1.47	.62	.96	1.48	2.15
18	2.40	2.68	2.02	1.02	1.47	2.27	.97	.59	.92	1.25	1.97
19	2.22	2.80	1.97	1.12	1.37	2.17	.72	.57	.87	1.22	1.72
20	2.07	4.09	1.92	1.62	1.32	2.03	.67	.67	.87	1.19	1.65
21	1.92	4.52	1.85	2.18	1.47	1.85	.65	.92	.85	1.16	1.59
22	1.77	3.32	1.90	3.07	1.57	1.79	.62	1.47	.82	1.16	1.52
23	1.97	2.72	1.90	4.37	1.72	1.70	.62	1.75	.89	1.15	1.45
24	2.10	2.49	1.82	3.17	2.47	1.57	.62	.72	.92	1.14	1.39
25	2.17	2.72	1.90	2.17	3.02	1.42	.59	.57	.97	1.13	1.35
26	2.07	2.80	2.47	1.50	3.53	1.35	.67	.52	.94	1.12	1.31
27	1.96	2.47	2.40	2.32	3.67	1.17	.77	.47	.92	1.11	1.29
28	1.99	2.27	2.00	2.97	2.67	1.12	.62	.45	.92	1.10	1.27
29	2.17	2.27	1.90	2.32	2.02	1.07	.57	1.72	.92	1.32	1.24
30		3.39	1.77	1.82	1.52	1.02	.47	5.47	.91	2.02	1.22
31		7.89		1.27		.97	.42		.94		1.22

DAILY GAGE HEIGHT, IN FEET, OF DAN RIVER AT CLARKSVILLE, VA., FOR 1897.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	1.75	2.70	2.90	1.98	1.72	1.60	1.10	0.71	0.23	0.05	1.55	2.75
2.....	1.75	3.20	2.75	1.95	2.85	1.56	1.03	.67	.20	.05	1.92	2.35
3.....	1.74	4.05	2.67	2.00	5.30	1.55	.98	.55	.15	.03	2.45	2.05
4.....	1.74	2.70	2.35	2.15	4.80	1.63	.95	.48	.15	.01	2.05	1.90
5.....	1.75	1.85	3.55	2.35	3.25	1.70	.90	.42	.00	— .03	1.60	1.85
6.....	1.77	2.35	4.65	2.85	3.10	1.08	.87	.38	.00	— .05	1.20	1.65
7.....	1.75	6.35	4.75	3.15	3.70	1.06	.83	.35	.00	— .09	.98	1.40
8.....	1.71	12.29	4.60	3.45	3.45	1.04	.98	.35	.00	— .15	.85	1.18
9.....	1.68	9.20	4.47	3.25	3.05	1.04	.90	.37	.00	— .02	.68	1.05
10.....	1.65	4.75	3.98	4.10	2.75	1.03	.85	.73	.00	+ .05	.55	.85
11.....	1.62	3.15	4.03	3.72	3.25	1.02	.80	.79	.00	.05	.42	.70
12.....	1.60	2.70	4.78	3.45	3.95	1.00	.70	.68	.00	1.10	.35	.65
13.....	1.58	3.95	4.90	3.15	4.25	.98	1.75	.65	.00	1.95	.25	.60
14.....	1.65	3.35	5.70	2.95	4.98	.98	1.30	.48	.00	1.25	.25	.65
15.....	1.68	3.15	4.95	2.70	5.30	.96	1.18	.42	.00	1.10	.18	.85
16.....	1.65	3.70	4.10	2.45	4.65	.95	.90	.48	.00	.95	.14	.95
17.....	1.68	4.05	3.45	2.17	4.15	.94	.75	.55	.00	1.65	.10	1.25
18.....	2.50	3.25	4.30	2.05	3.75	.92	.88	.75	.00	2.10	.05	1.55
19.....	3.45	2.85	3.95	1.98	3.15	.90	1.98	.85	.00	2.48	.25	1.40
20.....	4.06	3.35	3.62	1.90	2.85	.95	1.85	.95	.00	3.00	.23	1.10
21.....	3.60	4.10	3.40	1.86	2.25	.90	2.25	1.08	.00	1.55	.23	1.70
22.....	2.65	6.70	3.22	1.78	1.90	.88	1.48	.70	.00	.75	.22	2.35
23.....	2.05	8.45	3.03	1.75	1.88	.90	1.25	.89	.00	1.10	.20	4.10
24.....	1.85	11.52	2.70	1.75	1.85	.95	1.17	.75	.00	.88	.18	3.45
25.....	1.75	12.80	2.55	1.72	1.83	.93	.98	.58	.05	.65	.30	2.65
26.....	1.55	4.64	2.35	1.68	1.79	.90	.79	.42	.25	.85	.35	2.18
27.....	1.25	3.25	2.28	1.63	1.77	.88	.70	.35	.40	1.15	.58	1.80
28.....	.85	3.06	2.25	1.60	1.73	.95	.68	.30	.25	2.25	2.10	1.45
29.....	1.15	-----	2.15	1.57	1.66	.88	1.15	.28	.10	2.85	5.40	1.20
30.....	1.25	-----	2.08	1.55	1.63	.80	1.08	.28	.08	2.10	3.35	1.10
31.....	2.10	-----	2.03	-----	1.60	-----	.77	.25	-----	1.85	-----	.95

DAILY GAGE HEIGHT, IN FEET, OF DAN RIVER AT CLARKSVILLE, VA., FOR 1898.\*

Day.	Jan.	Feb.	Day.	Jan.	Feb.	Day.	Jan.	Feb.	Day.	Jan.	Feb.
1.....	0.70	0.87	9.....	1.00	0.90	17.....	0.75	0.55	25.....	2.70	1.02
2.....	.68	.72	10.....	.80	1.25	18.....	1.45	.53	26.....	3.92	.95
3.....	.65	.69	11.....	.70	1.12	19.....	1.05	.59	27.....	2.45	-----
4.....	.78	.65	12.....	1.10	1.02	20.....	.95	.55	28.....	2.05	-----
5.....	.95	.58	13.....	.89	.88	21.....	.80	.68	29.....	1.70	-----
6.....	1.05	.55	14.....	.89	.76	22.....	.74	.75	30.....	1.28	-----
7.....	1.00	.62	15.....	.70	.70	23.....	.68	.88	31.....	.95	-----
8.....	1.00	.75	16.....	.65	.60	24.....	1.25	.95			

\*Station discontinued February 26.

## WATER-POWERS OF NORTH CAROLINA.

RATING TABLE FOR DAN RIVER AT CLARKSVILLE, VA., FOR 1896-1897.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1896.							
0.00	590	3.20	4,800	6.20	12,650	9.40	21,350
0.20	700	3.40	5,250	6.40	13,200	9.60	21,900
0.40	825	3.60	5,725	6.60	13,750	9.80	22,450
0.60	965	3.80	6,225	6.80	14,300	10.00	23,000
0.80	1,115	4.00	6,725	7.00	14,800	10.20	23,550
1.00	1,280	4.20	7,225	7.20	15,350	10.40	24,100
1.20	1,450	4.40	7,725	7.40	15,900	10.60	24,650
1.40	1,645	4.60	8,250	7.60	16,450	10.80	25,200
1.60	1,880	4.80	8,800	7.80	17,000	11.00	25,750
1.80	2,130	5.00	9,250	8.00	17,550	11.20	26,300
2.00	2,425	5.20	9,800	8.20	18,100	11.40	26,850
2.20	2,725	5.40	10,350	8.40	18,650	11.60	27,400
2.40	3,075	5.60	10,900	8.60	19,200	11.80	27,950
2.60	3,525	5.80	11,450	8.80	19,750	12.00	28,500
2.80	3,925	6.00	12,100	9.00	20,300	12.20	29,050
3.00	4,350	-----	-----	9.20	20,800	-----	-----
1897.							
-1.50	400	0.40	890	3.80	6,704	7.50	15,066
-1.40	420	0.60	990	4.00	7,156	8.00	16,196
-1.30	440	0.80	1,100	4.20	7,608	8.50	17,326
-1.20	460	1.00	1,240	4.40	8,060	9.00	18,456
-1.10	480	1.20	1,400	4.60	8,512	9.50	19,586
-1.00	500	1.40	1,620	4.80	8,964	10.00	20,716
-0.90	520	1.60	1,900	5.00	9,416	10.50	21,846
-0.80	540	1.80	2,250	5.20	9,868	11.00	22,976
-0.70	560	2.00	2,636	5.40	10,320	11.50	24,106
-0.60	580	2.20	3,068	5.60	10,772	12.00	25,236
-0.50	600	2.40	3,540	5.80	11,224	12.50	26,366
-0.40	620	2.60	3,992	6.00	11,676	13.00	27,496
-0.30	645	2.80	4,444	6.20	12,128	13.50	28,626
-0.20	670	3.00	4,896	6.40	12,580	14.00	29,756
-0.10	700	3.20	5,348	6.60	13,032	-----	-----
0.00	730	3.40	5,800	6.80	13,484	-----	-----
0.20	810	3.60	6,252	7.00	13,936	-----	-----

ESTIMATED MONTHLY DISCHARGE OF DAN RIVER AT CLARKSVILLE, VA.

[Drainage area, 3,798 square miles.]

Month.	Discharge in Second-feet.			Total in Acre-feet.	Run-off.	
	Maximum.	Minimum.	Mean.		Depth in Inches.	Second-feet per Square Mile.
1896.						
February.....	20,163	2,091	5,070	291,626	1.48	1.37
March.....	17,245	2,231	4,935	303,453	1.53	1.33
April.....	24,017	2,091	4,777	284,231	1.44	1.29
May.....	7,650	1,255	2,715	166,940	0.84	0.73
June.....	5,900	1,255	2,145	127,636	0.64	0.58
July.....	*33,000	1,131	4,800	295,152	1.49	1.29
August.....	2,605	839	1,204	74,034	0.37	0.32
September.....	10,542	825	1,373	81,693	0.41	0.37
October.....	20,218	1,131	1,856	114,125	0.58	0.50
November.....	14,620	1,251	2,260	134,470	0.68	0.61
December.....	8,855	1,469	2,365	145,424	0.72	0.63

\*Estimated.

## ESTIMATED MONTHLY DISCHARGE OF DAN RIVER AT CLARKSVILLE, VA.

[Drainage area, 3,798 square miles.]

Month.	Discharge in Second-feet.			Total in Acre-feet.	Run-off.	
	Maxi-mum.	Mini-mum.	Mean.		Depth in Inches.	Second-feet per Square Mile.
1897.						
January.....	7,269	1,135	2,565	157,715	0.78	0.68
February.....	27,044	2,340	9,212	511,610	2.53	2.43
March.....	10,998	2,749	6,030	370,770	1.83	1.59
April.....	7,382	1,820	3,481	207,135	1.02	0.92
May.....	10,094	1,900	5,014	308,298	1.52	1.32
June.....	2,075	1,100	1,326	78,902	0.39	0.35
July.....	3,201	1,045	1,404	86,330	0.43	0.37
August.....	1,320	830	984	60,504	0.30	0.26
September.....	890	730	755	44,926	0.22	0.20
October.....	4,896	400	1,609	98,933	0.48	0.42
November.....	10,320	750	1,703	101,335	0.50	0.45
December.....	7,382	990	2,231	137,180	0.68	0.59
The year.....	27,044	400	3,026	2,163,638	10.68	0.80

## DAN RIVER AT SOUTH BOSTON, VA.

This station was established August 27, 1900. It is located in South Boston, on the Norfolk and Western Railway bridge, which crosses the river at that place.

This is a good station for the gaging of all except the highest stages of flow. At extreme heights the river spreads out over a flood plain of considerable width. The trestle connecting the bridge with the embankment on the south side of the river is a curve of rather high degree. The bed of the stream is of coarse sand and shifts slightly.

Discharge measurements are made from the bridge to which the gage is attached.

On May 18, 1903, the original wire gage was replaced by a standard chain gage referred to the same datum. The gage is located on the downstream guard rail near the center of the first span from the left bank. The length of the chain from the end of the weight to the marker is 35.02 feet. The gage is read twice daily by J. R. East. Bench mark No. 1 is the sharp inner corner, toward the left bank, of the plate attached to the inner surface of the struts at the center of the left span and furnishing a support to the wooden floor beam and tie. The elevation of the top of the plate is 32.88 feet above gage datum. Bench mark No. 2 is the top of a standard copper bolt set in the capstone of the abutment of the Southern Railway viaduct across the highway a short distance upstream from the crossing of the Norfolk and Western and the Southern railways. Its elevation is 30.68 feet above gage datum.

## WATER-POWERS OF NORTH CAROLINA.

## DISCHARGE MEASUREMENTS OF DAN RIVER AT SOUTH BOSTON, VA.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Gage Height (Feet).	Discharge (Second- feet).
1900.					
Aug. 27	E. W. Myers		580	1.00	1,046
Oct. 31	do.		618	2.20	1,576
1901.					
Jan. 15	Ernest Graves		1,856	5.79	4,447
Mar. 28	E. W. Myers		3,865	11.50	11,490
Apr. 22	N. C. Curtis		3,585	11.65	9,479
May 24	Ernest Graves		12,530	22.55	42,409
July 23	E. W. Myers		1,925	3.36	3,064
Nov. 25	J. S. Henderson		1,770	4.70	4,086
1902.					
July 9	B. S. Drane		1,261	1.90	1,551
Aug. 15	do.		1,001	1.65	1,333
Oct. 13	do.		2,683	7.95	6,864
Dec. 5	do.		3,237	8.90	9,197
1903.					
Feb. 18	B. S. Drane		11,520	22.45	43,036
Mar. 27	E. C. Murphy		3,274	8.10	7,393
May 18	E. W. Myers		1,532	3.01	2,959
May 19	do.		1,551	2.94	2,801
June 23	do.		1,809	3.59	3,044
June 23	do.		1,837	3.67	3,136
Aug. 8	B. S. Drane		1,519	2.62	2,378
Aug. 27	do.		1,220	1.39	1,401
Aug. 27	do.		1,225	1.44	1,389
Sept. 18	do.		3,309	8.78	9,411
Sept. 25	Paul and Sawyer		1,027	1.40	1,519
Dec. 2	W. C. Sawyer		1,080	1.61	1,258
1904.					
June 21	F. H. Brindage	253	1,542	2.68	2,422
Sept. 15	R. H. Bolster	295	3,320	10.82	10,890
Sept. 28	do.	243	1,152	1.22	1,385
Oct. 20	J. C. Hoyt	238	1,015	.745	904
1905.					
Mar. 11	A. H. Horton	268	2,498	6.38	5,853
July 22	N. C. Grover	250	1,514	2.71	2,610
Sept. 8	Bolster and Winter	244	1,280	1.78	1,734
1906.					
June 9		252	1,310	2.13	1,850

## DAILY GAGE HEIGHT, IN FEET, OF DAN RIVER AT SOUTH BOSTON, VA., FOR 1900.

Day.	Sept.	Oct.	Nov.	Dec.	Day.	Sept.	Oct.	Nov.	Dec.
1	0.62	1.50	2.00	3.00	17	8.55	2.40	1.70	3.00
2	.55	1.50	2.20	3.00	18	8.60	2.40	1.70	3.00
3	.95	1.50	2.00	3.00	19	2.00	2.00	1.70	2.90
4	.95	1.50	2.40	4.00	20	1.65	2.00	1.70	2.90
5	.60	1.40	2.10	14.10	21	1.25	1.90	1.70	3.00
6	.95	1.30	2.50	8.00	22	1.55	2.00	1.70	3.10
7	.77	1.90	2.70	4.80	23	1.30	2.00	1.60	3.10
8	.90	1.90	2.50	3.80	24	1.70	2.30	1.60	3.10
9	.37	2.40	2.50	3.50	25	1.70	7.50	1.60	3.00
10	.40	2.40	2.40	3.20	26	1.50	3.50	2.20	3.00
11	.50	2.40	2.00	3.20	27	1.60	3.50	5.60	3.00
12	.30	2.20	2.00	3.20	28	1.40	2.50	3.80	3.20
13	.40	2.20	2.00	3.20	29	1.30	2.50	3.20	3.00
14	.45	2.30	1.90	3.10	30	1.30	2.00	3.00	2.70
15	.40	2.00	1.90	2.90	31		2.00		2.80
16	4.90	2.00	1.80	2.90					

DAILY GAGE HEIGHT, IN FEET, OF DAN RIVER AT SOUTH BOSTON, VA., FOR 1901 AND 1902.

1901.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	4.00	3.00	2.20	4.50	3.50	4.00	2.80	3.60	5.20	5.10	2.50	2.60
2.....	4.00	3.30	2.20	4.50	3.30	3.80	2.80	2.90	5.00	4.90	2.50	2.60
3.....	3.00	3.30	2.20	18.35	3.30	3.60	3.00	2.70	4.20	4.80	2.50	3.00
4.....	2.40	3.20	2.20	21.75	3.20	3.80	2.90	2.40	4.10	4.40	2.50	4.10
5.....	2.40	3.20	2.20	14.40	3.20	3.50	2.90	2.65	3.80	4.10	2.50	4.70
6.....	2.40	3.10	2.30	-----	3.20	3.40	2.80	10.15	3.60	3.30	2.50	4.50
7.....	2.40	3.00	2.30	6.50	3.10	3.20	2.90	19.25	3.30	2.80	2.50	3.60
8.....	2.40	3.00	2.20	6.00	3.10	3.30	3.00	21.20	3.20	2.80	2.50	3.00
9.....	2.40	3.50	2.20	4.20	3.00	3.00	3.00	8.00	3.10	2.80	2.50	2.90
10.....	2.40	3.50	2.60	3.20	3.00	2.80	2.90	5.20	3.00	2.70	2.50	2.90
11.....	2.70	3.40	2.60	3.20	3.00	2.70	2.90	4.60	3.10	3.00	2.50	4.10
12.....	7.50	3.00	2.60	3.20	3.00	2.90	3.00	9.10	3.10	3.10	2.50	4.80
13.....	16.95	2.80	2.20	3.20	3.50	2.80	3.00	13.05	3.10	3.10	2.50	3.00
14.....	7.70	2.50	2.10	3.20	3.10	2.80	18.00	17.10	3.00	3.30	2.40	2.80
15.....	7.50	2.30	2.00	3.60	3.20	2.70	23.10	18.85	2.90	3.00	2.40	11.80
16.....	7.20	2.10	2.00	3.60	3.00	2.60	19.00	15.00	2.80	2.90	2.40	17.35
17.....	3.40	2.00	2.20	3.60	3.00	2.70	16.00	10.40	3.10	2.90	2.30	7.45
18.....	3.20	2.00	2.20	4.80	3.00	2.70	10.00	10.80	6.10	2.70	2.30	4.90
19.....	2.90	2.00	2.20	4.80	3.00	2.70	5.00	11.00	5.90	2.60	2.30	4.10
20.....	2.90	2.00	2.20	4.80	3.20	3.00	4.90	7.90	5.20	2.60	2.30	3.70
21.....	2.80	2.00	2.00	9.20	6.00	2.90	4.00	8.40	3.60	2.60	2.30	3.20
22.....	2.80	2.50	2.00	11.70	21.50	2.90	3.00	6.40	3.60	2.60	2.20	3.00
23.....	2.80	2.50	2.00	8.00	23.45	2.90	3.00	6.10	3.30	2.60	2.20	3.20
24.....	2.70	2.10	2.30	6.50	22.75	2.80	3.00	5.70	3.00	2.50	4.00	3.50
25.....	2.60	2.10	2.50	5.00	12.00	2.70	3.00	5.30	3.00	2.50	4.70	3.80
26.....	2.60	2.10	6.30	3.30	9.20	2.50	3.00	5.40	3.10	2.40	3.80	4.30
27.....	2.60	2.10	18.00	3.30	9.00	2.50	3.20	17.90	3.10	2.40	2.80	6.40
28.....	2.60	2.10	16.00	3.20	7.60	2.70	3.20	9.90	3.20	2.40	2.60	8.70
29.....	2.90	-----	6.50	3.10	6.00	2.80	2.90	6.45	3.20	2.40	2.60	10.90
30.....	3.20	-----	6.50	3.10	5.00	2.80	3.20	5.40	5.40	2.40	2.60	20.45
31.....	3.00	-----	5.20	-----	4.00	-----	3.80	4.85	-----	2.40	-----	24.85
1902.												
1.....	19.50	8.70	18.35	7.75	5.30	3.90	4.75	1.40	1.10	2.70	1.70	4.50
2.....	8.00	13.10	15.10	6.60	5.05	3.85	4.45	1.40	1.10	2.00	1.80	7.30
3.....	6.70	14.20	11.00	5.90	4.75	3.70	4.20	1.35	1.20	2.60	1.80	10.70
4.....	6.00	8.50	8.15	5.50	4.55	3.60	4.00	1.45	1.20	2.50	1.90	13.20
5.....	5.20	6.70	7.80	5.50	4.55	3.50	3.90	1.30	1.30	6.80	1.90	9.65
6.....	4.60	5.50	8.60	5.50	4.90	3.35	2.60	1.20	1.40	7.25	2.00	10.95
7.....	4.60	5.30	7.40	5.50	5.00	3.05	2.00	1.20	1.50	6.90	2.30	10.65
8.....	4.70	5.20	6.55	7.75	5.05	2.90	1.90	1.20	1.60	6.40	2.30	6.85
9.....	4.60	4.90	6.50	9.45	5.25	2.90	1.70	1.20	1.70	5.90	2.30	4.55
10.....	4.50	4.50	6.50	7.20	4.95	3.05	2.60	1.10	1.70	6.15	2.30	4.10
11.....	4.40	4.10	6.00	6.55	4.65	3.20	3.20	1.10	1.60	6.75	2.20	4.10
12.....	4.10	4.00	5.65	6.05	4.60	3.10	2.90	1.20	1.40	7.90	2.20	4.10
13.....	3.80	3.90	5.20	5.60	4.70	3.00	2.10	1.20	1.30	8.50	2.20	4.00
14.....	3.60	3.80	4.70	5.50	4.70	3.00	1.65	1.30	1.20	8.10	2.20	4.00
15.....	3.50	3.80	5.10	5.40	4.70	2.90	1.30	1.60	1.10	5.70	2.30	4.00
16.....	3.70	3.90	5.70	5.35	4.85	3.40	1.30	1.80	1.00	3.70	2.30	4.00
17.....	4.00	4.00	8.20	5.45	5.05	8.30	1.40	1.70	.90	2.50	2.50	3.90
18.....	3.80	4.10	7.70	5.75	5.45	16.45	1.50	1.30	.80	2.10	2.60	3.65
19.....	3.50	3.80	7.20	5.80	5.25	8.85	1.40	1.20	.70	1.80	2.00	3.45
20.....	3.80	4.00	6.30	5.65	5.05	5.00	1.30	1.10	.70	1.80	2.60	3.30
21.....	4.60	4.10	6.00	5.55	4.90	4.45	1.30	1.20	.70	1.80	2.70	3.15
22.....	5.65	5.20	5.50	5.30	4.80	3.35	1.30	1.30	1.00	1.70	2.70	3.00
23.....	7.75	6.10	5.65	5.05	4.95	3.00	1.20	1.65	1.50	1.60	2.80	3.00
24.....	5.30	7.20	5.80	4.90	5.10	2.90	1.10	1.70	2.60	1.60	2.70	2.90
25.....	5.20	13.35	5.70	4.80	5.10	2.90	1.10	1.45	3.05	1.50	2.70	2.80
26.....	5.10	18.55	5.10	4.70	5.10	2.80	1.05	1.15	4.20	1.40	2.50	2.80
27.....	5.00	18.40	5.00	4.85	5.00	2.80	1.10	1.00	4.35	1.50	2.40	2.80
28.....	4.80	12.85	5.15	4.95	4.65	3.45	1.30	1.00	3.75	1.60	2.30	2.80
29.....	4.80	-----	9.35	5.70	4.45	4.30	1.30	1.00	3.15	1.70	2.65	2.90
30.....	4.90	-----	15.80	5.20	4.15	4.85	1.30	1.10	2.90	1.70	3.30	2.90
31.....	4.90	-----	12.05	-----	4.00	-----	1.30	1.10	-----	1.70	-----	2.90



## WATER-POWERS OF NORTH CAROLINA.

MEAN DAILY GAGE HEIGHT, IN FEET, OF DAN RIVER AT SOUTH BOSTON, VA., FOR 1903 AND 1904.

1903	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	3.00	3.90	8.20	11.65	5.20	7.40	6.65	1.90	(*)	1.32	1.35	1.65
2.....	4.25	3.90	7.75	7.95	5.15	6.20	5.00	2.30	2.00	1.22	1.42	1.60
3.....	12.05	3.90	6.35	7.15	4.80	4.30	3.50	2.60	(*)	1.20	1.40	1.62
4.....	18.60	5.45	5.65	7.75	4.50	3.90	3.10	2.90	(*)	1.10	1.60	1.65
5.....	15.55	†15.95	5.15	8.10	4.50	3.90	7.25	4.45	(*)	1.20	2.90	1.67
6.....	9.10	11.70	4.95	6.90	4.50	4.85	12.45	4.30	(*)	1.22	3.40	1.62
7.....	6.90	8.85	4.90	6.10	4.50	8.30	14.00	4.50	(*)	1.30	2.75	1.62
8.....	5.90	8.25	4.90	12.45	4.30	14.55	9.35	2.60	(*)	1.65	1.90	1.48
9.....	5.25	7.25	5.15	†16.80	4.30	7.20	3.75	2.40	(*)	3.15	1.72	1.38
10.....	4.95	6.75	5.35	13.95	4.30	5.75	2.50	2.30	(*)	3.85	1.70	1.45
11.....	4.70	6.85	6.05	9.05	4.15	11.30	2.40	2.20	(*)	1.90	1.65	1.58
12.....	5.10	14.20	8.05	6.90	3.88	12.55	2.40	2.80	(*)	1.45	1.55	1.65
13.....	5.00	10.40	8.50	6.55	3.85	5.75	6.30	2.50	(*)	1.40	1.48	1.67
14.....	4.80	6.90	7.35	6.90	3.80	4.05	12.40	2.50	1.50	1.35	1.45	1.70
15.....	4.70	6.10	6.60	7.10	3.80	3.50	8.90	2.95	(*)	1.32	1.57	1.67
16.....	4.50	5.55	5.90	7.10	3.80	3.35	4.75	3.20	(*)	1.28	1.55	1.67
17.....	4.40	18.35	5.20	6.90	3.80	3.15	2.85	3.40	(*)	1.42	1.42	1.67
18.....	4.40	22.00	4.70	6.50	3.80	2.85	2.70	4.30	8.40	1.70	3.60	1.67
19.....	4.40	19.20	4.30	6.50	3.35	6.00	2.60	7.05	4.10	2.42	4.47	1.65
20.....	4.40	12.30	4.20	6.40	2.95	9.17	2.55	(*)	2.35	2.15	2.30	1.70
21.....	4.50	6.55	4.65	6.30	2.90	9.05	2.50	(*)	1.85	1.65	1.72	1.67
22.....	4.85	5.55	15.45	6.30	2.90	5.95	2.25	(*)	1.70	1.18	1.72	1.57
23.....	4.65	5.25	21.05	6.30	2.80	4.30	1.95	(*)	1.60	1.50	1.72	1.52
24.....	4.45	4.85	23.15	6.30	2.75	3.70	1.90	(*)	1.45	1.40	1.55	1.55
25.....	4.20	4.70	21.70	6.30	2.95	3.20	1.80	(*)	1.38	1.35	1.58	1.40
26.....	4.20	4.45	11.70	6.30	3.10	2.85	1.70	(*)	1.35	1.48	1.57	1.40
27.....	4.20	4.30	7.85	9.80	3.30	2.70	1.60	1.40	1.35	1.52	1.58	1.55
28.....	4.10	4.65	6.40	8.70	4.70	2.60	1.60	(*)	1.35	1.45	1.58	6.95
29.....	4.10		5.80	7.15	8.20	5.67	1.50	(*)	1.35	1.42	1.62	5.00
30.....	4.00		11.00	5.45	9.25	7.75	1.55	(*)	1.35	1.30	1.72	2.00
31.....	4.00		12.05		9.30		1.90	(*)		1.48		1.62
1904.												
1.....	1.95	2.15	2.40	2.25	2.30	3.20	3.10	4.67	1.25	1.28	0.35	1.38
2.....	1.85	1.80	2.20	2.25	1.80	4.99	2.90	4.60	2.37	.72	.68	1.48
3.....	2.10	2.05	2.15	2.20	1.40	5.45	2.47	5.00	4.75	.20	.98	1.95
4.....	1.75	1.90	2.30	2.00	1.70	3.55	1.95	3.77	4.02	.42	1.02	2.65
5.....	1.62	2.10	2.25	1.75	1.45	2.45	1.35	2.00	2.79	.47	1.02	3.98
6.....	§.55	2.25	2.35	1.65	1.40	1.80	.92	1.67	2.10	.95	.72	5.18
7.....	.62	2.20	3.50	1.75	1.90	2.65	.87	1.57	1.30	.67	.42	4.62
8.....	1.45	6.10	4.55	1.80	1.80	3.15	1.57	4.60	.96	.37	.68	3.68
9.....	2.07	6.05	4.95	1.70	1.65	2.55	1.05	7.25	1.72	.15	1.12	2.70
10.....	1.90	3.80	4.20	1.90	1.80	1.95	.92	11.15	1.32	.02	1.18	1.92
11.....	2.05	2.95	3.25	1.95	1.80	1.80	1.32	9.70	1.05	.05	1.20	1.52
12.....	2.17	2.70	2.65	1.70	1.80	3.55	1.55	6.15	.92	.62	1.02	1.42
13.....	2.07	2.05	2.60	1.50	1.50	4.85	1.60	3.75	1.47	.63	1.78	1.68
14.....	2.00	1.90	2.50	1.40	1.50	2.63	1.42	2.65	3.97	.65	2.88	1.55
15.....	1.82	2.15	2.45	1.40	2.40	1.73	1.22	1.82	10.75	.68	2.38	1.58
16.....	1.55	2.30	2.40	1.40	2.40	1.43	1.22	1.62	9.05	.28	1.68	1.68
17.....	1.45	1.55	2.25	1.45	3.70	1.40	.87	1.27	3.27	.02	1.58	1.72
18.....	1.42	1.60	2.10	1.40	4.05	1.33	.65	1.37	1.82	.25	1.48	1.68
19.....	1.55	2.05	2.05	1.35	8.00	1.30	.92	1.40	1.07	.70	1.42	1.20
20.....	1.27	4.20	2.10	1.35	4.40	1.23	.67	1.52	1.37	.62	.88	1.38
21.....	1.45	4.00	1.80	1.30	2.70	2.50	.68	1.37	1.37	.52	.48	1.68
22.....	1.70	8.50	1.65	1.30	2.25	2.05	.77	3.77	1.37	1.42	.58	1.58
23.....	2.85	11.05	2.10	1.30	1.70	1.78	2.15	3.37	1.37	.68	1.62	1.50
24.....	3.00	8.05	5.45	1.30	1.60	1.48	4.67	2.27	1.37	.38	1.52	1.62
25.....	2.90	4.55	9.70	1.30	1.55	1.28	6.30	1.50	1.12	.35	1.50	1.62
26.....	2.10	3.80	5.30	1.35	1.50	1.02	2.50	1.37	1.13	1.18	1.40	1.95
27.....	1.95	3.05	4.05	1.60	1.35	.85	2.05	1.27	1.32	1.05	.82	2.35
28.....	1.75	3.15	3.80	2.35	1.30	1.32	2.10	1.05	1.32	.85	.38	2.10
29.....	.87	2.55	3.55	3.25	1.15	1.95	2.97	.72	1.28	.68	1.18	1.98
30.....	.88		2.80	2.80	1.10	2.77	4.17	.85	1.22	.45	1.42	1.78
31.....	1.08		2.45		1.00		4.52	1.07		.28		1.75

\*No record.

†Highest record, 17.7 at 4 p. m.

§Ice.

†Highest record, 16.2 at 10 a. m.

\*Highest record, 22.5 at 4 p. m.

MEAN DAILY GAGE HEIGHT, IN FEET, OF DAN RIVER AT SOUTH BOSTON, VA., FOR 1905-1906.

1905.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	1.69	1.17	4.55	1.70	2.05	7.48	1.45	2.48	1.35	1.28	1.40	1.55
2.....	1.59	1.25	4.07	1.62	1.82	3.68	1.50	1.95	3.30	.50	1.40	1.40
3.....	1.87	1.15	3.75	1.58	2.68	2.98	1.60	2.10	6.98	1.30	1.42	1.48
4.....	1.92	.95	3.55	1.62	4.95	2.60	2.72	1.98	4.65	1.30	1.25	2.80
5.....	1.65	.95	3.29	3.12	3.22	2.18	3.50	2.40	3.40	1.30	1.15	5.25
6.....	3.35	1.22	2.85	7.52	2.48	1.80	8.35	2.78	3.05	1.30	1.05	4.85
7.....	12.57	1.45	2.49	8.68	3.62	1.78	8.40	2.60	2.25	1.40	.95	3.50
8.....	9.29	1.39	2.52	5.20	5.48	2.02	6.70	2.30	1.75	1.22	.85	2.25
9.....	5.17	1.45	2.59	3.92	4.00	2.28	4.95	2.75	1.45	1.30	1.35	2.05
10.....	3.17	1.39	3.65	2.82	2.85	1.68	2.78	6.92	1.25	.80	1.32	2.65
11.....	2.92	2.09	6.49	2.55	2.55	1.75	1.98	10.80	1.30	1.15	1.32	4.75
12.....	5.70	3.29	5.92	5.68	5.30	1.62	3.50	8.35	1.50	4.10	1.15	4.30
13.....	9.35	6.29	5.32	7.88	10.12	1.42	10.25	5.75	1.55	3.25	.85	3.00
14.....	7.85	8.82	4.52	8.50	7.72	1.35	10.50	4.38	1.18	2.30	.88	3.15
15.....	4.60	6.62	3.70	11.00	6.05	1.30	8.68	4.00	1.02	1.70	1.65	3.40
16.....	2.99	4.02	3.00	11.62	9.58	1.18	5.80	8.88	1.30	1.05	1.35	4.55
17.....	2.02	2.85	2.68	6.65	10.05	1.48	3.30	4.70	1.05	1.40	1.40	4.30
18.....	1.97	2.75	2.38	4.52	7.02	1.65	2.48	4.35	1.20	1.52	1.42	4.95
19.....	2.25	2.89	2.28	2.80	4.68	1.78	2.05	2.08	1.05	1.35	1.55	3.58
20.....	2.29	4.09	2.22	2.82	3.08	1.40	1.82	2.35	1.20	1.25	1.00	4.80
21.....	2.07	14.47	2.28	2.55	2.52	1.82	1.98	.95	1.02	1.50	1.32	6.85
22.....	1.85	15.59	2.20	2.32	2.22	1.55	2.72	1.75	1.10	1.02	1.50	13.92
23.....	1.67	10.45	2.08	2.15	2.05	1.28	3.55	2.50	.98	1.45	1.40	11.40
24.....	1.42	7.99	1.98	2.08	1.95	1.52	4.75	4.45	1.05	1.25	1.48	7.95
25.....	1.17	5.75	2.42	1.95	2.00	1.75	4.52	4.82	1.05	1.10	1.42	6.80
26.....	1.02	8.09	2.35	1.72	4.22	1.95	3.50	4.45	1.20	1.05	1.70	4.90
27.....	.89	7.29	3.38	4.18	14.90	1.95	2.15	3.80	1.30	1.52	1.65	4.45
28.....	.95	5.59	2.78	4.70	12.08	1.28	1.82	2.88	1.15	1.60	1.45	6.30
29.....	.95		2.30	2.98	6.12	1.32	4.95	1.88	1.08	1.22	1.42	15.30
30.....	.99		1.95	2.38	5.05	1.28	5.80	1.48	1.30	1.28	1.45	10.80
31.....	.99		1.80		7.32		5.42	1.38		1.55		7.05
1906.												
1.....	4.25	2.9	4.28	8.75	2.6	1.68	2.6	3.35	4.18	2.55	3.0	1.98
2.....	3.95	2.25	4.12	5.75	2.3	1.38	2.28	4.2	4.25	5.85	3.1	2.08
3.....	4.55	2.25	4.35	4.5	2.4	1.45	2.0	3.4	4.05	3.95	2.85	2.02
4.....	15.1	2.05	5.0	4.4	2.55	1.58	2.05	3.65	5.95	4.15	2.55	2.05
5.....	19.7	3.75	5.65	3.8	2.18	1.55	2.18	3.25	4.6	8.75	2.35	2.15
6.....	18.0	4.3	4.8	3.52	2.3	1.4	3.7	3.75	3.88	7.32	2.3	2.35
7.....	9.6	3.02	3.82	2.7	3.48	1.6	3.95	3.3	3.28	4.95	2.08	2.4
8.....	6.6	3.85	3.45	3.08	3.95	1.65	4.0	3.08	2.85	3.6	2.18	2.22
9.....	5.62	4.65	3.42	3.7	3.02	1.75	3.5	3.32	2.62	2.5	2.22	2.28
10.....	3.75	4.5	3.1	5.25	2.2	3.65	3.45	3.2	2.15	1.25	2.4	2.42
11.....	3.35	3.8	2.75	5.1	2.25	4.82	3.05	4.08	1.82	1.1	2.35	2.52
12.....	4.2	3.6	2.3	4.08	2.35	3.58	2.75	4.4	1.9	1.18	2.6	2.55
13.....	3.4	3.18	2.58	3.45	2.5	2.7	2.22	4.75	1.85	.95	2.55	2.62
14.....	5.0	3.18	2.9	3.88	2.18	2.12	2.28	5.45	2.15		2.3	2.72
15.....	6.35	2.9	3.65	4.8	1.78	1.78	2.95	6.48	2.02		2.52	2.6
16.....	4.3	2.6	5.15	5.7	1.85	1.8	3.08	7.72	2.3		2.42	2.65
17.....	5.35	2.95	4.65	4.5	1.82	3.1	3.18	10.8	2.3	2.75	2.55	2.75
18.....	4.45	2.9	3.5	3.58	1.92	3.92	3.7	15.6	2.2	2.8	2.75	2.8
19.....	4.1	2.7	4.05	3.18	2.05	3.42	4.05	18.5	2.25	4.65	2.8	2.62
20.....	3.65	2.55	4.0	2.88	1.92	5.78	4.95	17.0	2.48	7.12	3.05	2.52
21.....	3.05	2.65	5.95	2.68	1.85	4.7	6.75	13.7	3.85	12.75	3.18	2.42
22.....	3.85	3.5	5.9	2.58	1.98	3.6	10.0	8.9	4.42	8.4	3.2	2.35
23.....	7.9	2.32	4.05	2.7	1.85	3.9	12.5	7.68	3.9	6.5	2.55	2.22
24.....	12.3	2.35	3.25	2.58	1.42	3.65	10.3	6.08	3.38	5.05	2.55	2.3
25.....	8.35	2.5	4.3	2.52	1.8	3.42	8.0	4.85	3.22	4.6	2.35	2.13
26.....	6.9	2.55	3.8	2.55	2.35	3.85	7.75	4.08	3.15	4.12	2.22	2.12
27.....	6.0	2.75	4.25	2.42	3.0	6.6	6.65	4.18	2.5	3.9	2.15	2.02
28.....	8.85	4.12	4.9	2.32	3.5	3.5	7.48	4.18	1.9	3.8	2.1	2.02
29.....	9.4		4.6	2.88	3.45	2.55	5.35	4.65	2.12	3.85	2.05	2.12
30.....	7.68		8.3	2.85	1.7	2.42	3.7	4.95	1.98	3.92	1.92	4.75
31.....	6.3		11.3		1.55		3.4	4.02		3.75		10.7

NOTE.—Gage heights interpolated November 5-7, inclusive (1905).

NOTE.—Discharge probably unaffected by ice (1906).

DAILY GAGE HEIGHT, IN FEET, OF DAN RIVER AT SOUTH BOSTON, VA., FOR 1907.

Day.	Jan.	Feb.	Mar.	Apr.	May.	Day.	Jan.	Feb.	Mar.	Apr.	May.
1.....	11.20	2.42	5.30	2.90	4.08	16.....	2.35	2.72	10.00	2.70	-----
2.....	9.80	2.55	5.60	3.75	3.50	17.....	2.22	2.45	7.45	2.18	-----
3.....	7.95	2.42	5.20	3.95	3.02	18.....	2.08	2.25	4.95	2.28	-----
4.....	5.20	2.85	4.60	4.15	3.00	19.....	2.18	2.20	3.08	2.75	-----
5.....	3.35	3.02	4.30	4.45	-----	20.....	2.28	2.35	3.18	2.68	-----
6.....	3.10	3.18	4.55	5.05	-----	21.....	2.68	2.40	3.12	2.88	-----
7.....	2.88	3.18	4.02	6.20	-----	22.....	2.75	2.12	2.60	3.32	-----
8.....	2.70	3.22	4.45	6.95	-----	23.....	2.48	2.02	2.40	3.25	-----
9.....	2.62	3.55	5.80	6.20	-----	24.....	2.60	1.92	2.25	3.55	-----
10.....	2.50	3.78	6.25	5.05	-----	25.....	2.75	1.85	2.20	4.10	-----
11.....	2.48	4.05	6.30	4.25	-----	26.....	2.62	2.05	2.25	4.30	-----
12.....	2.22	4.10	6.00	3.28	-----	27.....	2.75	2.48	2.20	4.85	-----
13.....	2.12	4.25	4.35	2.98	-----	28.....	2.90	3.92	2.15	4.05	-----
14.....	2.25	2.95	4.90	2.80	-----	29.....	2.70	-----	2.08	5.15	-----
15.....	2.12	2.70	7.05	2.50	-----	30.....	2.35	-----	2.22	4.62	-----
						31.....	2.15	-----	2.28	-----	-----

RATING TABLE FOR DAN RIVER AT SOUTH BOSTON, VA., FOR 1900 TO 1902.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
0.7	900	3.8	2,930	7.0	6,000	13.5	14,000
.8	950	4.0	3,100	7.2	6,200	14.0	14,900
1.0	1,050	4.2	3,280	7.4	6,400	14.5	15,950
1.2	1,150	4.4	3,460	7.6	6,600	15.0	17,000
1.4	1,250	4.6	3,640	7.8	6,800	15.5	18,200
1.6	1,360	4.8	3,820	8.0	7,000	16.0	19,400
1.8	1,480	5.0	4,000	8.5	7,550	16.5	20,750
2.0	1,600	5.2	4,200	9.0	8,100	17.0	22,100
2.2	1,730	5.4	4,400	9.5	8,700	17.5	23,555
2.4	1,860	5.6	4,600	10.0	9,300	18.0	25,000
2.6	2,000	5.8	4,800	10.5	9,900	18.5	26,600
2.8	2,150	6.0	5,000	11.0	10,500	19.0	28,200
3.0	2,300	6.2	5,200	11.5	11,100	19.5	30,000
3.2	2,450	6.4	5,400	12.0	11,700	20.0	31,800
3.4	2,600	6.6	5,600	12.5	12,400		
3.6	2,760	6.8	5,800	13.0	13,100		

RATING TABLE FOR DAN RIVER AT SOUTH BOSTON, VA., FROM JANUARY 1 TO DECEMBER 31, 1903.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.1	1,185	3.6	3,240	8.2	8,110	13.2	15,260
1.2	1,250	3.7	3,330	8.4	8,350	13.4	15,610
1.3	1,320	3.8	3,420	8.6	8,610	13.6	15,970
1.4	1,390	3.9	3,510	8.8	8,870	13.8	16,330
1.5	1,465	4.0	3,600	9.0	9,130	14.0	16,700
1.6	1,540	4.2	3,800	9.2	9,390	14.2	17,080
1.7	1,620	4.4	4,000	9.4	9,650	14.4	17,460
1.8	1,700	4.6	4,200	9.6	9,910	14.6	17,850
1.9	1,780	4.8	4,400	9.8	10,170	14.8	18,250
2.0	1,860	5.0	4,600	10.0	10,430	15.0	18,650
2.1	1,940	5.2	4,800	10.2	10,690	15.2	19,060
2.2	2,020	5.4	5,000	10.4	10,960	15.4	19,480
2.3	2,100	5.6	5,200	10.6	11,240	15.6	19,910
2.4	2,180	5.8	5,400	10.8	11,520	15.8	20,350
2.5	2,265	6.0	5,600	11.0	11,800	16.0	20,790
2.6	2,350	6.2	5,810	11.2	12,100	16.5	21,950
2.7	2,435	6.4	6,030	11.4	12,400	17.0	23,170
2.8	2,520	6.6	6,250	11.6	12,700	17.5	24,450
2.9	2,610	6.8	6,470	11.8	13,000	18.0	25,840
3.0	2,700	7.0	6,690	12.0	13,300	18.5	27,320
3.1	2,790	7.2	6,910	12.2	13,620	19.0	28,860
3.2	2,880	7.4	7,150	12.4	13,940	19.5	30,460
3.3	2,970	7.6	7,390	12.6	14,260	20.0	32,130
3.4	3,060	7.8	7,630	12.8	14,580	20.5	33,890
3.5	3,150	8.0	7,870	13.0	14,920	21.0	35,800

Tangent above 21 feet gage height. Differences above this point, 403 per tenth. Table well determined to 10 feet gage height. Above this point it is approximate.

STATION RATING TABLE FOR DAN RIVER AT SOUTH BOSTON, VA., FOR 1904, 1905 AND 1906.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
0.00	400	2.40	2,186	5.40	4,709	10.00	9,700
0.10	451	2.50	2,265	5.60	4,892	10.20	9,980
0.20	510	2.60	2,345	5.80	5,077	10.40	10,260
0.30	574	2.70	2,425	6.00	5,264	10.60	10,540
0.40	642	2.80	2,505	6.20	5,453	10.80	10,820
0.50	713	2.90	2,585	6.40	5,644	11.00	11,100
0.60	786	3.00	2,665	6.60	5,838	11.50	11,815
0.70	861	3.10	2,746	6.80	6,034	12.00	12,540
0.80	937	3.20	2,827	7.00	6,234	12.50	13,265
0.90	1,014	3.30	2,908	7.20	6,434	13.00	14,000
1.00	1,091	3.40	2,989	7.40	6,638	13.50	14,750
1.10	1,168	3.50	3,070	7.60	6,845	14.00	15,500
1.20	1,245	3.60	3,152	7.80	7,055	14.50	16,310
1.30	1,323	3.70	3,234	8.00	7,275	15.00	17,180
1.40	1,401	3.80	3,317	8.20	7,495	15.50	18,100
1.50	1,479	3.90	3,400	8.40	7,715	16.00	19,100
1.60	1,557	4.00	3,484	8.60	7,945	17.00	21,650
1.70	1,635	4.20	3,653	8.80	8,175	18.00	24,600
1.80	1,713	4.40	3,824	9.00	8,415	19.00	27,800
1.90	1,791	4.60	3,997	9.20	8,655	20.00	31,200
2.00	1,870	4.80	4,172	9.40	8,905	21.00	34,700
2.10	1,949	5.00	4,349	9.60	9,160	22.00	38,300
2.20	2,028	5.20	4,528	9.80	9,425	23.00	42,000
2.30	2,107	-----	-----	-----	-----	-----	-----

NOTE.—The above table is applicable only for open-channel conditions. It is based on discharge measurements made during 1903 to 1905 and is fairly well defined. The table has been extended below gage height 0.75 foot.

## ESTIMATED MONTHLY DISCHARGE OF DAN RIVER AT SOUTH BOSTON, VA.

[Drainage area, 2,750 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maxi- mum.	Mini- mum.	Mean.	Second- feet per Square Mile.	Depth in Inches.
1900.					
September.....	7,605	700	1,430	0.52	0.58
October.....	6,500	1,200	1,842	.67	.77
November.....	4,600	1,300	1,804	.66	.74
December.....	15,100	2,075	2,785	1.01	1.16
1901.					
January.....	21,965	1,800	3,387	1.23	1.42
February.....	2,675	1,600	2,042	.74	.77
March.....	25,000	1,600	3,504	1.27	1.46
April.....	38,800	2,375	6,382	2.32	2.59
May.....	45,600	2,300	7,297	2.65	3.06
June.....	3,100	1,925	2,292	.88	.93
July.....	44,200	2,150	6,132	2.23	2.58
August.....	36,600	1,800	9,866	3.59	4.14
September.....	5,100	2,150	2,902	1.06	1.18
October.....	4,100	1,800	2,353	.86	.99
November.....	3,730	1,730	2,032	.74	.83
December.....	51,200	2,000	6,875	2.50	2.89
The year.....	51,200	1,600	4,589	1.67	22.84
1902.					
January.....	30,000	2,675	4,738	1.72	1.98
February.....	26,760	2,930	7,105	2.58	2.69
March.....	26,120	3,730	7,269	2.64	3.04
April.....	8,640	3,730	4,534	1.76	1.96
May.....	4,450	3,100	3,876	1.41	1.63
June.....	20,615	2,150	3,535	1.29	1.44
July.....	3,775	1,075	1,713	.62	.71
August.....	1,480	1,050	1,197	.44	.51
September.....	3,415	900	1,545	.56	.62
October.....	7,550	1,250	3,158	1.15	1.33
November.....	2,525	1,420	1,842	.67	.75
December.....	13,460	2,150	4,186	1.52	1.75
The year.....	30,000	900	3,750	1.36	18.41
1903.					
January.....	28,240	2,700	5,934	2.16	2.49
February.....	39,800	3,510	9,953	3.62	3.78
March.....	44,400	3,800	10,064	3.67	4.23
April.....	22,670	5,050	8,065	2.93	3.27
May.....	9,520	2,475	4,050	1.47	1.60
June.....	17,750	2,350	5,785	2.10	2.34
July.....	16,700	1,465	4,389	1.60	1.84
August (1-19 and 27)*.....	-----	-----	2,861	1.04	.77
September (15 days)*.....	-----	-----	2,133	.78	.44
October.....	3,465	1,185	1,551	.56	.65
November.....	4,070	1,355	1,811	.66	.74
December.....	6,635	1,376	1,811	.66	.76

\*No record for missing days.

ESTIMATED MONTHLY DISCHARGE OF DAN RIVER AT SOUTH BOSTON, VA.  
[Drainage area, 2,750 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maxi- mum.	Mini- mum.	Mean.	Second- feet per Square Mile.	Depth in Inches.
1904.					
January.....	2,665	750	1,663	0.605	0.697
February.....	11,270	1,518	3,229	1.18	1.27
March.....	9,290	1,596	2,847	1.04	1.20
April.....	2,868	1,323	1,663	.605	.675
May.....	7,275	1,091	1,999	.727	.838
June.....	4,755	976	2,147	.781	.871
July.....	5,548	824	1,877	.683	.788
August.....	11,430	876	2,901	1.05	1.21
September.....	10,795	1,029	2,250	.818	.913
October.....	1,417	375	772	.281	.324
November.....	2,569	608	1,233	.448	.500
December.....	4,510	1,245	1,953	.710	.819
The year.....	11,430	375	2,045	.744	10.11
1905.					
January.....	13,370	1,006	3,004	1.09	1.26
February.....	18,270	1,052	4,563	1.66	1.73
March.....	5,730	1,713	2,635	.958	1.10
April.....	11,990	1,541	3,992	1.45	1.62
May.....	17,160	1,729	4,845	1.76	2.03
June.....	6,720	1,230	1,867	.679	.758
July.....	10,400	1,440	3,927	1.43	1.65
August.....	10,820	1,385	3,382	1.23	1.42
September.....	6,214	1,076	1,709	.621	.693
October.....	3,568	937	1,463	.532	.613
November.....	1,635	976	1,337	.486	.542
December.....	17,720	1,401	5,020	1.83	2.11
The year.....	18,270	937	3,145	1.14	15.53
1906.*					
January.....	30,200	2,700	7,160	2.60	3.00
February.....	4,040	1,910	2,750	.999	1.04
March.....	11,500	2,110	3,960	1.44	1.66
April.....	8,120	2,120	3,320	1.21	1.35
May.....	3,440	1,420	2,130	.774	.89
June.....	5,840	1,390	2,650	.963	1.07
July.....	13,300	1,870	4,250	1.55	1.79
August.....	26,200	2,730	6,410	2.33	2.69
September.....	5,220	1,730	2,670	.971	1.08
October.....	13,600	1,050	3,870	1.41	1.63
November.....	2,830	1,810	2,270	.825	.92
December.....	10,700	1,850	2,480	.902	1.04
The year.....	30,200	1,050	3,660	1.33	18.16
1907.					
January.....	11,400	1,930	3,040	1.11	1.28
February.....	3,700	1,750	2,530	.920	.96
March.....	9,700	1,930	3,830	1.39	1.60
April.....	6,180	2,010	3,430	1.25	1.40

\*NOTE.—Values for entire year are good.

## DAN RIVER AT MADISON, N. C.

This station was established May 14, 1903. It is located at the Southern Railway bridge about one-fourth mile from Madison and one-half mile above the mouth of Mayo River.

Above the station the channel is straight for about 600 feet and the velocity of the current is good. About 300 feet below the station the channel makes an abrupt turn. The right bank is low and overflows. There is a long trestle approach to the bridge on this side, and all water passes beneath the bridge and approaches. The left bank is low and overflows. A small stream enters from this side. The bed of the Dan is sandy, but is probably permanent. There is but one channel at all stages.

Discharge measurements are made from the upstream side of the covered wooden two-span railway bridge and its wooden approaches.

The standard chain gage is located on the upstream side of the bridge, in the sixth panel of the first span from the left end. The length of the chain from the end of the weight to the marker is 35.24 feet. The gage is read once each day by J. W. Ore. Bench mark No. 1 is the edge of the top of a large wire nail driven flush into the top corner of the wooden floor beam beneath the gage box on the upstream side of the bridge. The point is indicated by the letters "B. M." in white paint. Its elevation is 34.10 feet above gage zero. Bench mark No. 2 is a standard iron bench-mark post set in cleared level ground on the left (south) side of the railway track. It is 77 feet west of the end of the trestle and 9 feet south of the south rail of the track. Its elevation is 35.25 feet above gage zero.

DISCHARGE MEASUREMENTS OF DAN RIVER AT MADISON, N. C., IN 1903.

Date.	Hydrographer.	Gage Height (Feet).	Discharge (Second-feet).
May 14	E. W. Myers	2.05	950
May 14	do.	2.07	1,002
June 18	do.	2.05	731
June 18	do.	2.05	742
July 18	B. S. Drane	1.17	683
July 18	do.	1.14	626
Aug. 26	do.	1.16	527
Oct. 1	do.	.86	367
Oct. 1	do.	.86	396
Nov. 18	do.	2.31	817
Dec. 21	do.	2.07	748

## DISCHARGE MEASUREMENTS OF DAN RIVER AT MADISON, N. C., IN 1904, 1905, 1906 AND 1907.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1904.						
Jan. 23	B. S. Drane	151	405	1.90	2.18	772
Mar. 10	do	151	321	1.97	1.80	631
Mar. 10	do	151	318	1.96	1.79	623
Apr. 15	do	149	224	1.83	1.06	411
Apr. 16	do	149	224	1.84	1.09	412
June 6	do	150	196	1.81	.90	356
June 6	do	150	198	1.82	.90	361
June 7	do	152	344	1.98	1.90	662
Sept. 26	do	148	159	1.59	.50	254
Sept. 27	do	148	159	1.59	.52	254
Dec. 19	do	148	150	1.85	.58	278
Dec. 20	do	148	159	1.98	.65	314
1905.						
Apr. 21	B. S. Drane	140	257	2.35	1.67	603
Apr. 21	do	140	257	2.30	1.67	590
Aug. 21	do	146	336	2.30	2.17	773
Sept. 18	do	140	258	1.67	1.32	431
1906.						
June 21	W. E. Hall	142	374	1.95	2.37	729
1907.						
Mar. 26	W. E. Hall	139	282	2.00	1.70	568
Sept. 5	F. P. Thomas	140	341	2.21	2.58	753

## MEAN DAILY GAGE HEIGHT, IN FEET, OF DAN RIVER AT MADISON, N. C., FOR 1903.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.		3.95	2.00	8.35	1.30	0.95	0.85	0.70
2.		2.70	1.85	2.35	1.15	.85	.85	1.00
3.		2.55	1.75	1.85	1.10	.85	.90	.70
4.		2.20	1.70	1.80	1.05	.85	.85	.85
5.		4.00	2.50	1.70	1.00	.85	2.80	1.05
6.		3.60	3.15	3.35	1.00	.90	1.50	.90
7.	17.25	17.00	2.75	1.70	.90	.85	1.00	.70
8.	4.80	4.80	1.80	1.35	.90	2.00	.95	.90
9.	4.20	4.20	1.65	1.30	4.65	2.30	.90	.95
10.	5.65	5.65	1.60	1.30	1.30	1.10	.95	.90
11.	3.45	3.45	1.65	1.70	1.10	.95	.90	.75
12.	3.00	3.00	1.75	1.75	1.10	.90	.95	1.00
13.	2.55	2.55	6.10	1.10	1.00	.90	.90	1.15
14.		2.40	3.75	1.30	0.90	0.85	0.90	1.10
15.	2.00	2.35	2.25	6.60	.90	.85	.85	1.00
16.	1.95	2.20	1.80	2.35	.90	.95	.85	.70
17.	1.95	2.10	1.70	1.80	5.70	1.10	1.30	.85
18.	1.90	2.05	1.65	8.60	2.65	2.05	2.50	.55
19.	1.90	2.00	1.60	2.50	1.50	1.25	1.50	.75
20.	1.80	3.65	1.60	1.85	1.20	1.00	1.10	1.00
21.	1.90	2.35	1.40	1.75	1.15	1.00	1.00	2.25
22.	1.75	2.00	1.35	1.70	1.10	.90	1.05	1.35
23.	1.70	3.90	2.00	1.60	1.05	.90	.95	1.15
24.	1.60	2.10	1.40	1.30	1.05	.95	1.00	1.10
25.	1.80	2.00	1.25	1.25	1.00	.85	.95	1.15
26.	2.00	3.85	1.25	1.15	.95	.80	.95	1.45
27.	1.90	7.05	1.20	1.20	.95	.80	.80	1.20
28.	3.00	2.80	1.10	1.10	1.00	.80	.75	1.10
29.	4.10	2.75	2.50	1.05	.95	.85	.90	1.00
30.	2.75	2.20	2.15	2.00	.90	.85	.90	.85
31.	2.65		2.00	1.30		.80		.75



MEAN DAILY GAGE HEIGHT, IN FEET, OF DAN RIVER AT MADISON, N. C., FOR 1904-1905.

1904.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	0.90	1.00	1.50	1.65	1.00	2.40	1.80	1.20	1.50	0.35	0.30	0.50
2.....	.95	.55	1.50	1.55	1.00	2.70	1.20	3.80	1.85	.30	.30	.45
3.....	1.00	.95	1.45	1.40	1.00	1.90	.85	3.25	1.50	.30	.30	1.45
4.....	.60	.80	1.40	1.30	1.00	1.45	.75	1.85	1.20	.30	.35	1.10
5.....	.55	.80	1.35	1.25	.90	1.10	.70	1.00	1.40	.30	.80	.75
6.....	.65	1.35	1.20	1.20	.90	.90	.90	2.20	1.10	.30	.70	2.50
7.....	1.00	1.60	1.40	1.40	.90	2.30	1.00	5.40	.80	.30	.40	1.50
8.....	1.00	4.05	4.80	1.60	2.00	1.20	.80	3.60	.80	.25	.40	1.20
9.....	.85	2.35	2.45	1.50	1.55	1.10	.70	2.20	.80	.20	.40	.80
10.....	.90	1.60	1.90	1.60	1.80	.80	.75	5.20	.70	.20	.40	.75
11.....	1.10	1.20	1.70	1.30	1.35	4.00	1.00	2.80	1.00	.20	.35	.65
12.....	1.00	1.20	1.55	1.25	1.10	3.10	1.10	2.20	.80	.20	.30	.60
13.....	1.10	1.10	1.40	1.10	1.00	2.00	1.35	1.60	.60	.20	.50	.55
14.....	1.00	1.25	1.45	1.15	.90	1.30	.90	1.20	1.00	.20	.50	.50
15.....	.75	1.30	1.60	1.10	1.60	1.10	.50	1.10	1.00	.20	.55	.50
16.....	.70	1.20	1.35	1.15	1.10	.90	.40	3.70	1.20	.20	.60	.50
17.....	.90	.80	1.10	1.10	.90	2.20	.55	1.85	1.10	.20	.55	.70
18.....	.75	.90	1.25	1.00	7.30	1.80	.50	1.30	1.10	.20	.50	.70
19.....	.65	1.20	1.40	1.00	3.10	3.70	.40	1.00	1.00	.20	.50	.60
20.....	.70	2.65	1.20	1.00	1.80	1.50	.45	4.00	.50	.25	.50	.60
21.....	1.15	1.75	1.20	.90	1.40	1.30	.50	5.90	.50	.30	.50	.60
22.....	1.05	5.50	1.30	.90	1.25	2.20	2.70	2.45	.50	.30	.45	.60
23.....	2.05	4.05	1.25	.85	1.10	1.25	1.90	1.65	.50	.30	.50	.50
24.....	1.50	2.80	10.30	.80	1.00	.90	2.70	1.50	.50	.30	.45	.85
25.....	1.25	2.05	3.90	.90	1.05	.80	1.50	1.35	.40	.30	.45	.95
26.....	1.10	1.65	2.50	1.00	1.00	.70	1.00	1.20	.40	.30	.40	1.00
27.....	1.00	1.60	2.50	2.00	.90	.60	1.20	1.10	.40	.30	.40	1.30
28.....	.75	1.50	2.70	1.90	.90	.90	1.40	1.00	.40	.30	.40	2.65
29.....	.35	1.50	2.10	1.35	.80	3.90	3.00	.90	.40	.30	.45	1.95
30.....	1.15		1.80	1.20	.80	2.40	2.30	.90	.40	.30	.50	1.40
31.....	1.05		1.60		.80		3.50	.80		.30		1.10
1905.												
1.....	1.05	2.0	2.5	1.3	1.3	2.5	1.0	1.6	1.5	0.9	0.95	0.7
2.....	1.0	1.2	2.45	1.1	1.25	2.15	1.2	1.25	1.4	.85	.95	.8
3.....	1.0	.7	2.3	1.1	1.25	1.9	1.7	2.0	3.1	.9	.95	2.0
4.....	1.0	.8	2.1	1.1	1.2	1.5	1.4	3.1	2.75	.95	.9	1.3
5.....	.6	.7	2.0	1.8	2.9	1.4	4.5	3.0	2.3	.95	.9	1.2
6.....	.75	.9	1.9	6.8	8.0	1.4	5.0	1.9	1.5	.9	.9	1.15
7.....	7.8	1.4	1.8	3.6	5.6	1.3	3.0	1.55	1.6	.8	.9	1.1
8.....	2.8	1.25	1.6	2.3	4.8	1.2	1.5	4.8	1.6	.75	.9	1.0
9.....	1.5	1.0	1.5	2.0	2.75	1.15	1.65	2.5	1.4	.75	.85	1.5
10.....	1.6	1.45	2.1	1.65	2.2	1.1	3.0	4.8	1.35	.8	.85	6.0
11.....	1.4	1.65	3.9	1.4	2.5	1.1	2.9	5.1	1.4	1.15	.85	2.9
12.....	3.15	3.65	3.3	2.25	3.8	1.1	2.8	2.6	1.3	3.4	.85	1.8
13.....	5.2	4.6	2.7	3.7	5.1	1.2	7.5	4.2	1.2	1.5	.8	1.7
14.....	2.95	3.6	2.3	3.4	4.1	1.1	3.8	2.4	1.15	1.25	.8	1.5
15.....	1.5	2.2	1.9	3.2	2.75	1.05	3.0	2.6	1.1	1.15	.8	1.75
16.....	1.3	1.7	1.7	2.8	6.9	1.0	2.5	3.2	1.0	1.0	.75	2.0
17.....	1.2	1.6	1.6	2.5	4.0	1.1	2.05	3.9	1.2	1.0	.75	2.1
18.....	1.3	1.4	1.6	2.2	2.9	1.6	1.8	2.8	1.15	1.05	.75	2.0
19.....	1.3	1.4	1.5	2.0	2.1	1.3	2.45	2.35	1.15	1.0	.75	1.8
20.....	1.3	8.6	1.45	1.9	2.0	1.5	1.8	2.0	1.15	.95	.75	1.6
21.....	1.25	8.1	1.4	1.8	1.75	1.35	1.55	2.0	1.1	.95	.7	15.1
22.....	1.15	6.6	1.5	1.7	1.7	1.25	2.7	1.9	1.1	.9	.8	5.4
23.....	1.0	5.4	1.45	1.6	1.55	1.0	2.25	1.8	1.05	.95	.75	3.4
24.....	.95	4.2	1.3	1.5	1.6	1.9	1.9	5.55	1.0	.95	.75	3.5
25.....	.85	3.8	1.5	1.45	1.2	1.75	2.85	5.9	.95	1.0	.8	3.1
26.....	1.0	3.6	1.4	1.4	1.05	1.4	1.6	5.6	.95	1.1	.8	2.5
27.....	1.85	3.6	2.3	2.85	5.5	1.15	1.4	3.2	.9	1.05	.75	2.1
28.....	1.3	2.9	1.4	2.0	3.7	1.05	2.0	2.0	.85	1.0	.75	2.0
29.....	1.4		1.4	1.85	5.8	.95	5.4	1.8	.8	1.0	.7	6.7
30.....	1.6		1.4	1.5	5.2	1.0	3.5	1.65	.85	1.0	.7	3.4
31.....	1.8		1.4		3.0		2.15	1.55		1.0		2.6

MEAN DAILY GAGE HEIGHT, IN FEET, OF DAN RIVER AT MADISON, N. C., FOR 1906-1907.

1906.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	2.4	3.0	2.25	3.4	1.75	1.3	1.7	3.3	3.9	2.9	2.35	2.05
2.....	2.15	2.6	2.0	2.75	1.85	1.2	1.65	4.0	3.1	2.7	2.3	2.0
3.....	2.0	2.25	1.7	2.4	1.95	1.2	2.0	4.3	2.9	2.5	2.2	2.0
4.....	17.9	2.0	5.4	2.4	2.0	1.15	1.85	2.6	3.1	5.9	2.15	1.95
5.....	5.4	2.1	3.1	2.3	2.05	1.1	1.7	2.15	2.85	3.6	2.15	1.95
6.....	3.7	2.3	2.65	2.25	1.7	6.1	1.6	2.15	2.5	2.9	2.15	1.9
7.....	2.9	2.2	2.3	2.25	2.4	1.9	1.8	1.9	2.3	3.2	2.1	1.9
8.....	2.75	2.1	2.1	2.05	2.15	2.0	1.5	1.9	2.2	2.9	2.1	1.85
9.....	2.55	2.0	2.1	2.1	1.85	1.9	4.8	1.8	2.1	2.45	2.1	1.8
10.....	2.35	2.2	2.0	2.7	1.5	1.8	2.9	1.8	2.05	3.1	2.05	1.8
11.....	2.2	2.1	1.8	2.45	1.5	2.5	1.8	1.8	1.9	2.6	2.05	2.6
12.....	2.25	2.0	1.75	2.1	1.5	1.85	1.45	1.6	1.8	2.1	2.15	2.2
13.....	4.2	2.0	1.75	2.05	1.5	2.0	1.5	5.2	5.4	2.0	2.1	1.9
14.....	4.8	2.0	1.7	2.0	1.45	3.6	1.5	3.1	3.5	2.0	2.1	1.9
15.....	3.4	1.9	2.15	3.1	1.45	3.1	1.4	5.0	2.4	1.95	2.05	1.9
16.....	3.0	1.8	5.3	2.8	1.4	3.5	5.0	14.9	2.1	1.9	2.15	1.85
17.....	2.75	1.7	3.2	2.45	1.3	4.0	2.4	15.5	2.1	2.0	2.1	1.85
18.....	2.4	1.8	2.6	2.25	1.3	3.2	4.5	14.3	2.1	2.3	2.0	4.4
19.....	2.3	1.75	2.15	2.15	1.3	2.5	2.3	5.9	2.0	9.3	2.5	3.9
20.....	2.2	1.7	7.4	2.1	1.25	3.9	2.3	7.6	3.5	7.5	4.6	4.2
21.....	2.15	1.65	4.0	2.05	1.25	2.5	6.3	4.2	2.65	5.0	3.2	4.6
22.....	2.0	3.2	2.8	1.95	1.25	3.3	6.5	3.2	2.4	4.2	2.8	2.9
23.....	10.1	2.8	2.6	1.95	1.25	2.35	6.3	2.9	3.0	3.6	2.5	2.6
24.....	6.6	2.25	2.45	1.9	1.2	1.8	2.4	2.7	2.85	3.2	2.3	2.2
25.....	4.4	2.0	2.15	1.8	1.2	3.8	4.4	2.5	2.75	3.0	2.2	2.0
26.....	3.2	1.9	2.7	1.75	1.15	6.2	2.1	2.65	2.4	2.9	2.2	1.85
27.....	6.1	1.75	2.6	1.7	2.2	2.7	1.8	3.2	2.2	2.8	2.15	1.8
28.....	6.4	2.65	2.5	1.7	2.0	2.0	4.2	6.1	2.0	2.7	2.1	2.0
29.....	4.6		2.55	1.65	1.6	1.9	2.4	8.6	2.0	2.5	2.1	2.4
30.....	3.9		2.9	1.7	1.5	1.8	7.7	7.5	2.1	2.5	2.05	2.25
31.....	3.4		5.0		1.4		6.8	5.8		2.4		4.2
1907.												
1.....	7.80	1.80	3.20	2.80	2.20	2.90	1.95	1.50	0.90	1.65	1.10	1.75
2.....	4.10	1.75	3.10	2.20	2.30	9.10	1.90	1.65	.80	1.50	1.15	1.65
3.....	3.40	1.85	3.70	1.85	2.30	4.40	2.00	1.50	.90	1.40	2.70	1.60
4.....	3.00	1.80	3.20	1.80	2.50	2.90	2.00	1.40	1.00	1.30	1.60	1.50
5.....	2.85	1.70	2.50	1.70	2.50	2.40	1.90	1.30	1.20	1.25	1.30	1.50
6.....	2.60	1.60	2.30	1.95	2.40	2.20	1.85	1.20	2.10	1.25	1.20	1.45
7.....	2.50	1.40	2.20	9.00	2.30	2.05	3.10	1.25	1.30	1.20	1.15	1.50
8.....	2.40	1.60	2.20	3.20	2.20	2.30	2.65	1.30	1.05	1.20	1.20	1.55
9.....	2.40	1.75	2.15	2.95	2.20	2.20	1.50	1.40	1.00	1.30	1.15	1.50
10.....	2.30	1.85	2.20	2.60	2.80	2.00	1.50	1.50	.90	1.25	1.30	5.60
11.....	2.20	1.80	3.20	2.40	2.10	2.90	1.50	1.60	3.10	1.20	1.35	3.70
12.....	2.15	1.75	2.80	2.30	1.90	2.30	1.40	1.60	2.20	1.15	1.40	2.40
13.....	2.10	1.75	2.50	2.20	1.80	2.65	2.00	1.40	1.70	1.10	1.35	2.15
14.....	2.10	1.65	2.20	2.00	1.80	7.90	3.15	2.00	1.45	1.10	1.30	4.20
15.....	2.10	1.70	3.40	2.00	1.75	3.60	7.30	1.50	1.30	1.10	1.25	6.30
16.....	2.05	1.65	2.70	1.95	2.10	2.70	2.80	1.30	1.15	1.10	1.20	4.20
17.....	2.00	1.60	2.45	1.95	1.90	2.40	2.00	1.50	1.10	1.10	1.20	2.80
18.....	1.95	1.60	2.30	1.90	1.75	2.20	2.70	3.50	1.05	1.05	1.20	2.40
19.....	1.90	1.60	2.20	1.90	1.65	2.00	2.20	1.90	1.00	1.00	1.70	2.30
20.....	1.90	1.65	2.15	1.90	1.65	1.90	1.90	1.50	1.00	.95	1.40	2.25
21.....	1.85	1.80	1.90	1.80	1.60	2.20	1.80	1.30	.95	.90	1.60	2.15
22.....	1.80	1.60	1.90	1.80	1.55	2.00	1.70	1.30	.90	.90	1.50	2.00
23.....	1.75	1.50	1.80	5.80	1.50	3.10	1.60	1.40	5.20	.90	5.20	12.00
24.....	1.70	1.50	1.80	5.60	1.80	4.40	1.50	1.30	6.00	1.00	10.30	8.40
25.....	1.65	1.60	1.75	3.10	1.60	2.30	1.40	1.30	2.50	.95	4.20	3.60
26.....	1.65	4.40	1.70	2.80	1.70	2.00	1.40	1.10	2.40	.90	3.60	3.10
27.....	1.70	2.80	1.75	2.50	1.60	1.90	1.50	1.10	2.30	1.00	2.80	2.80
28.....	1.50	2.70	1.70	3.50	1.50	1.70	1.40	1.00	2.15	1.10	2.40	2.50
29.....	1.60		1.70	2.90	1.40	2.90	1.40	.90	1.90	1.10	1.90	2.15
30.....	2.00		1.65	2.60	1.40	2.20	1.80	.90	1.80	1.05	1.80	6.00
31.....	1.90		1.65		1.40		1.50	.90		1.05		5.20

NOTE.—Discharge probably unaffected by ice.

## WATER-POWERS OF NORTH CAROLINA.

MEAN DAILY GAGE HEIGHT, IN FEET, OF DAN RIVER, AT SOUTHERN RAILWAY BRIDGE, NEAR MADISON, N. C., FOR 1908.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1.....	3.4	2.1	3.2	2.35	3.8	1.7	1.55	1.5	1.9	1.25
2.....	3.1	2.0	3.0	4.6	2.9	1.6	1.5	1.25	2.8	1.15
3.....	2.7	1.6	2.9	3.2	2.4	1.5	3.3	1.2	2.75	1.15
4.....	2.5	2.0	2.75	2.8	2.2	16.4	3.5	1.1	2.3	1.1
5.....	5.9	2.1	2.5	2.55	2.1	5.7	3.1	1.1	1.95	1.1
6.....	3.4	2.1	5.2	2.5	2.1	3.8	3.0	2.9	5.7	1.0
7.....	14.4	2.7	3.9	2.45	5.0	3.2	2.5	2.4	3.3	.8
8.....	12.9	2.45	3.2	2.4	3.4	2.7	2.35	1.9	2.4	1.0
9.....	4.8	2.25	3.0	2.3	2.65	2.3	2.25	1.75	2.05	1.5
10.....	3.6	2.1	2.9	2.3	2.4	2.25	2.0	1.6	1.8	6.7
11.....	2.9	7.4	2.7	2.2	2.15	2.4	1.7	1.5	1.7	3.8
12.....	14.9	7.2	3.0	2.15	2.1	2.6	1.6	1.4	1.6	2.7
13.....	5.7	8.1	2.8	2.1	2.1	2.4	1.55	1.3	1.5	2.1
14.....	4.1	9.9	2.7	2.1	2.0	2.25	1.65	1.25	1.4	1.85
15.....	3.5	12.8	2.65	2.0	2.0	3.2	1.45	1.2	1.35	1.75
16.....	3.2	7.3	2.5	3.9	2.05	3.9	1.4	1.2	1.3	1.65
17.....	2.9	4.5	2.45	3.2	2.0	2.8	1.25	1.2	1.3	1.6
18.....	2.7	4.3	2.5	2.6	1.9	2.5	1.2	1.2	1.3	1.5
19.....	2.5	5.4	2.5	2.3	1.9	2.3	1.6	1.25	1.25	1.5
20.....	2.4	4.1	2.6	2.2	2.15	2.1	1.5	1.25	1.25	1.5
21.....	2.35	3.9	2.65	2.1	2.4	3.2	1.4	1.2	1.2	1.45
22.....	2.35	3.6	3.6	2.0	2.45	2.6	3.80	2.1	1.2	1.45
23.....	2.2	3.1	3.9	1.9	2.45	2.2	2.4	2.9	1.2	1.5
24.....	2.0	2.9	5.8	1.9	2.7	2.0	2.0	3.4	1.15	4.0
25.....	1.8	2.75	4.2	2.25	2.35	1.9	1.75	11.2	1.15	1.55
26.....	2.15	4.1	3.4	2.15	1.95	1.8	1.4	20.3	1.1	2.4
27.....	2.4	3.4	3.0	2.1	1.8	1.75	1.25	6.4	1.1	2.1
28.....	2.3	3.3	2.8	2.0	1.75	1.75	2.6	3.2	2.2	1.95
29.....	2.1	3.0	2.7	1.9	1.7	1.65	2.0	2.8	1.75	4.7
30.....	2.0	-----	2.6	5.5	1.9	1.6	1.75	2.35	1.4	5.5
31.....	2.0	-----	2.5	-----	1.5	-----	1.6	-----	-----	3.4

RATING TABLE FOR DAN RIVER AT MADISON, N. C., FROM MAY 7, 1903, TO DECEMBER 31, 1904.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
.20	180	.60	278	1.00	386	1.80	642
.25	192	.65	291	1.10	416	1.90	676
.30	204	.70	304	1.20	446	2.00	710
.35	216	.75	317	1.30	476	2.10	744
.40	228	.80	330	1.40	508	2.20	778
.45	240	.85	344	1.50	540	2.30	813
.50	252	.90	358	1.60	574	2.40	849
.55	265	.95	372	1.70	608	2.50	885

The above table is applicable only for open-channel conditions. It is based upon 10 discharge measurements made during 1904 and 4 measurements made during 1903. It is well defined between gage heights 0.50 foot and 2.50 feet.  
Discharge estimated above 2.50 gage height.

STATION RATING TABLE FOR DAN RIVER AT MADISON, N. C., FROM JANUARY 1 TO DECEMBER 31, 1905.

.20	180	.80	330	1.40	508	2.00	710
.30	204	.90	358	1.50	540	2.10	744
.40	228	1.00	386	1.60	574	2.20	778
.50	252	1.10	416	1.70	608	2.30	813
.60	278	1.20	446	1.80	642	2.40	849
.70	304	1.30	476	1.90	676	2.50	885

NOTE.—The above table is applicable only for open-channel conditions. It is based on 17 discharge measurements made during 1903-1905. It is well defined between gage heights 0.5 foot and 2.5 feet. Above 2.5 feet the discharge is only approximate.

STATION RATING TABLE FOR DAN RIVER AT MADISON, N. C., FOR LOW WATER PERIOD, 1906 AND 1907.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
.70	247	.60	495	.50	805	.40	1,154
.80	272	.70	526	.60	842	.50	1,195
.90	298	.80	558	.70	879	.60	1,237
1.00	325	.90	591	.80	917	.70	1,279
.10	352	2.00	625	.90	955	.80	1,322
.20	380	.10	660	3.00	994	.90	1,366
.30	408	.20	696	.10	1,033	4.00	1,410
.40	436	.30	732	.20	1,073	----	----
.50	465	.40	768	.30	1,113	----	----

The above table is applicable only for open-channel conditions. It is based upon 4 discharge measurements made during 1905-1907 and the form of the 1905 curve. It is not well defined.

ESTIMATED MONTHLY DISCHARGE OF DAN RIVER AT MADISON, N. C., FOR 1903-4.

Month.	Discharge in Second-feet.		
	Maximum.	Minimum.	Mean.
1903.			
May 8-31.....	2,465	574	992
June.....	3,300	710	1,199
July.....	2,735	416	742
August.....	4,250	401	910
September.....	2,495	358	541
October.....	813	330	398
November.....	1,020	317	418
December.....	795	265	388
1904.			
January.....	727	216	376
February.....	2,375	265	659
March.....	5,255	416	808
April.....	710	330	463
May.....	3,455	330	550
June.....	1,575	278	653
July.....	1,335	228	480
August.....	2,615	330	865
September.....	659	228	349
October.....	216	180	195
November.....	330	204	242
December.....	953	240	386
1905.			
January.....	3,880	278	686
February.....	4,460	304	1,195
March.....	1,525	476	684
April.....	3,170	416	822
May.....	4,020	401	1,306
June.....	885	372	496
July.....	3,060	386	1,019
August.....	2,615	461	1,134
September.....	1,155	330	495
October.....	1,290	317	412
November.....	372	304	334
December.....	11,000	304	1,237

MONTHLY DISCHARGE OF DAN RIVER AT MADISON, N. C., FOR 1906-1907.  
[Drainage area, -----square miles.]

Month.	Discharge in Second-feet.		
	Minimum 7 Days.	Minimum Day.	Mean for Month.
1906.			
January.....	770	625	---
February.....	544	510	675
March.....	588	526	---
April.....	540	510	702
May.....	386	306	496
June.....	627	352	---
July.....	536	436	---
August.....	576	496	---
September.....	609	558	---
October.....	638	501	---
November.....	657	625	---
December.....	584	558	---
The period.....	386	352	---
1907.			
January.....	511	465	---
February.....	498	436	---
March.....	526	510	747
April.....	586	526	---
May.....	470	436	594
June.....	697	526	---
July.....	462	436	---
August.....	333	298	452
September.....	331	272	---
October.....	306	298	361
November.....	300	352	---
December.....	485	450	---
The period.....	298	272	---

## MAYO RIVER AT MADISON, N. C.

Mayo River rises in the eastern part of Patrick County, Va., flows first southeast, then south, and unites with the Dan at Madison, N. C.

The station was established as a bench-mark station April 16, 1904. It is located about one-half mile from Madison, at the highway bridge on the road to Mayodan, N. C., and about 1,000 feet above the junction of Mayo and Dan rivers.

The channel is straight for about 600 feet above and 1,000 feet below the station. The current is swift. Both banks are high, wooded, and not liable to overflow. The bed of the stream is composed of sand, with some rocks along the left bank. There is but one channel. At low water all water passes under the left span; at higher stages under both spans. Two cotton mills about 3 miles upstream will control the flow at all times, and freshets in Dan River will also cause backwater at the station.

Discharge measurements are made from the downstream side of the two-span bridge resting on three stone piers.

The bench mark is the upper edge of a small tie plate on the upstream side of the bottom of the third strut from the left bank on the upstream side of the bridge. Its elevation is 28.00 feet above gage datum. No gage-height records are made.

## DISCHARGE MEASUREMENTS OF MAYO RIVER AT MADISON, N. C., IN 1904 AND 1905.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1904.						
Apr. 16	B. S. Drane.....	59	249	1.13	1.82	281
June 7	.....do.....	60	270	.90	2.09	244
Sept. 27	.....do.....	61	250	.81	1.24	202
1905.						
Apr. 21	B. S. Drane.....	63	271	1.16	2.14	314
Aug. 21	.....do.....	84	391	0.99	2.43	388

RIVER PROFILE SURVEYS IN THE ROANOKE RIVER  
DRAINAGE BASIN.

## SURVEY OF ROANOKE RIVER.

This survey was made during 1905 by the United States Geological Survey in co-operation with the Geological Survey of Virginia.

The work was done by Mr. A. H. Horton, under the direction of the Water Resources Branch.

This survey extends from Weldon, N. C., to Roanoke, Va., but only the portion in North Carolina is here given.

The following list shows the elevation above sea-level, and distances from Weldon, N. C., of the various points noted.

## ELEVATIONS ON ROANOKE RIVER, FROM WELDON, N. C., TO THE VIRGINIA STATE LINE.

Distance in Miles.		Elevation in Feet.
1.2	Railroad bridge canal water survey.....	58
2.3	Canal, water survey.....	60
6.1	Lock 4 foot of canal water surface.....	61
6.1	Lock 4 head of canal water surface.....	67
6.1	Lock 3 foot of canal water surface.....	67
6.1	Lock 3 head of canal water surface.....	73
6.2	Lock 2 foot of canal water surface.....	73
6.2	Lock 2 head of canal water surface.....	80
6.2	Lock 1 foot of canal water surface.....	80
6.2	Lock 1 head of canal water surface.....	91
9.2	Canal head of water surface.....	96
9.7	Water surface.....	98
12.4	Deep Creek, mouth of water surface.....	99
13.3	Eatons Falls, foot water surface.....	101
13.9	Eatons Falls, head water surface.....	113
14.5	Wilkins Ferry, water surface.....	113
16.4	Allens Creek, mouth water surface.....	115
17.0	Water surface.....	121
18.0	Water surface.....	127
18.6	Sturgeonhole Falls, head of, water surface.....	135
20.1	Water surface (foot of shoals).....	139
20.3	Water surface (head of shoals).....	144
20.4	Pittards Creek, mouth of, water surface.....	144
20.8	Water surface.....	145
21.4	Water surface.....	150
21.8	Stonehouse Creek, mouth of, water surface.....	151
24.4	Eatons Ferry, water surface.....	154
26.5	Hub Quarter Creek, mouth of, water surface.....	155
29.0	Water surface.....	156
30.1	Poplar Creek, mouth of, water surface.....	157
32.0	State Line, water surface.....	160
33.7	Great Creek, mouth of, water surface.....	164

## TAR RIVER DRAINAGE BASIN.

### DESCRIPTION OF BASIN.

This river takes its rise in Person and Granville counties, North Carolina, flows in a southeasterly direction through Franklin, Nash, Edgecombe, and Pitt counties, and empties into the Pamlico River, in Beaufort, near the town of Washington, its length, in a straight line, being about 120 miles, and by the river perhaps 175. The principal towns on the stream are Washington, Greenville, Tarboro, Rocky Mount, and Louisburg. Tarboro, 53 miles from Pamlico River, is the head of navigation, and it is hoped to secure ultimately a channel 3 feet in depth at all stages of the water up to this point, but at present this depth exists only during nine months of the year. The obstructions to navigation consist of stumps, snags, fallen trees, and artificial obstructions placed there during the war.

The river drains an area of about 3,000 square miles, the greater part of which lies north of the stream, from which side the principal tributaries—Swift and Fishing creeks—enter, draining, respectively, 350 and 760 square miles. The stream crosses the fall line at Rocky Mount, below which point there is no water-power. The general character of the drainage basin resembles that of the Roanoke. The leading productions are tobacco, corn, and cotton, most of the cotton being raised in the eastern part, and most of the tobacco in the western. There are no lakes in the basin. The bed of the stream above the fall line is rock in places, but generally sand, clay, gravel or mud, the declivity of the stream being quite uniform. Above Rocky Mount the bottoms are narrower than on the Roanoke, and the banks are generally high enough to confine the river, except in very heavy freshets. Below Rocky Mount the banks are often overflowed, the river rising sometimes 25 feet at Tarboro.

### MEASUREMENTS OF STREAM FLOW.

#### TAR RIVER AT TARBORO, N. C.

This station is in the town of Tarboro and is located on the bridge of the Atlantic Coast Line, which crosses the river here. This gage was established July 25, 1896.

Measurements of discharge are made at the station and occasionally at the highway bridge crossing the stream about 200 yards above, as the lower section is sometimes obstructed by rafts of logs.

## DISCHARGE MEASUREMENTS OF TAR RIVER AT TARBORO, N. C.

Date.	Hydrographer.	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage (Height Feet).	Discharge (Second-feet).
1896.					
July 25	E. W. Myers.....	1,061	1.85	4.35	1,963
Sept. 5	do.....	225	1.67	0.43	376
Sept. 17	A. P. Davis.....	1,061	2.12	4.51	2,294
Dec. 17	E. W. Myers.....	3,676	2.35	13.20	8,651
1897.					
Jan. 23	E. W. Myers.....	1,822	1.98	6.65	3,520
Feb. 26	do.....	3,489	2.32	13.53	8,106
Mar. 15	do.....	5,263	2.46	18.13	12,993
May 17	do.....	1,629	1.87	6.30	3,058
July 29	do.....	744	1.44	2.25	1,079
Oct. 2	do.....	238	0.80	-0.65	192
1898.					
Jan. 13	E. W. Myers.....	877	1.51	2.30	1,323
1899.					
Feb. 5	E. W. Myers.....	---	---	9.10	5,165
May 24	do.....	---	---	2.60	1,125
June 7	do.....	---	---	2.00	798
Oct. 16	do.....	---	---	2.95	1,150
Nov. 28	do.....	---	---	2.20	876
1900.					
Apr. 11	E. W. Myers.....	---	---	4.48	1,915
Apr. 23	do.....	---	---	14.90	10,237
May 18	do.....	---	---	2.18	1,003
June 30	do.....	---	---	2.30	1,030
Aug. 9	do.....	---	---	0.40	371
Nov. 2	do.....	---	---	-0.30	87
Nov. 21	do.....	---	---	0.50	412

## DAILY GAGE HEIGHT, IN FEET, OF TAR RIVER AT TARBORO, N. C., FOR 1896.

Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....		1.30	1.00	2.82	0.89	3.87	17.....		1.25	4.50	1.98	2.45	12.73
2.....		1.00	.60	3.55	.96	4.34	18.....		1.28	4.35	1.50	1.95	13.82
3.....		.90	.45	4.20	1.20	4.85	19.....		1.00	4.20	1.00	1.63	14.50
4.....		1.20	.80	2.95	1.05	4.90	20.....		.73	4.60	1.15	1.61	13.50
5.....		1.46	.51	2.18	1.07	4.50	21.....		.50	3.52	.90	1.50	12.20
6.....		3.48	.30	1.90	2.15	4.70	22.....		.65	2.10	.81	1.42	10.40
7.....		2.87	.35	1.50	2.76	5.00	23.....		.62	5.85	.69	1.30	8.20
8.....		1.95	.60	1.20	3.72	5.80	24.....		.65	7.30	.85	1.44	6.44
9.....		1.45	.35	1.05	3.13	6.50	25.....		.70	6.40	1.28	1.12	5.40
10.....		1.00	.23	.85	2.59	6.72	26.....	3.50	1.20	4.60	1.12	1.05	4.75
11.....		.82	.20	.90	2.10	6.10	27.....	3.00	1.30	3.60	1.32	1.02	4.20
12.....		.50	.22	.81	1.71	5.33	28.....	2.68	1.40	2.85	1.00	1.00	4.05
13.....		1.78	.12	1.05	2.62	4.64	29.....	2.25	1.60	2.58	.89	1.02	3.80
14.....		1.92	.10	1.42	4.05	4.07	30.....	2.00	1.48	2.72	.80	1.45	3.50
15.....		1.85	.18	1.70	3.20	3.98	31.....	1.76	1.10		.58		3.20
16.....		1.53	3.45	2.00	2.62	9.75							



## DAILY GAGE HEIGHT, IN FEET, OF TAR RIVER AT TARBORO, N. C., FOR 1897-1898.

1897.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	3.50	3.10	11.90	4.35	2.65	1.50	0.70	1.80	0.90	-0.60	0.80	2.20
2.....	3.55	5.50	10.00	4.30	4.10	1.40	.50	1.25	3.00	-.65	1.40	3.10
3.....	3.60	7.40	8.00	4.00	5.10	2.70	.40	1.20	5.00	-.70	2.00	3.00
4.....	3.31	8.90	6.90	4.30	5.90	2.20	.30	.70	3.60	-.62	4.60	2.50
5.....	3.25	10.20	6.20	4.95	5.10	1.75	.20	.50	2.10	-.64	4.40	2.30
6.....	3.22	10.22	5.60	6.10	3.80	1.50	.40	.45	1.35	-.40	3.00	2.80
7.....	3.15	9.60	6.60	7.50	3.30	1.35	.30	.40	1.40	-.50	2.10	3.20
8.....	3.00	10.10	8.55	8.50	3.10	2.00	1.05	1.30	1.00	-.60	1.50	2.80
9.....	2.90	11.38	10.30	7.40	2.70	2.02	.60	1.00	.70	-.70	1.65	2.40
10.....	2.60	12.35	11.80	7.80	2.50	1.55	.50	.90	.40	-.60	1.20	2.20
11.....	2.50	11.10	11.70	11.00	2.40	1.30	1.50	.50	.10	-.50	.80	1.90
12.....	2.45	8.09	11.10	13.40	2.25	1.35	1.63	.40	-.05	-.52	.90	1.90
13.....	2.55	7.00	12.80	14.90	2.35	1.15	2.50	.85	-.07	-.50	.70	1.60
14.....	2.60	6.98	15.00	14.50	3.80	1.10	7.20	.60	-.02	-.51	.50	1.70
15.....	3.00	7.51	16.50	13.60	5.40	1.10	5.80	.20	.02	-.63	.60	1.90
16.....	3.35	6.70	17.90	11.50	7.50	1.05	4.70	.15	-.05	-.71	.70	2.10
17.....	3.43	6.15	19.20	8.60	7.00	.80	2.80	.35	-.21	-.90	.50	2.20
18.....	3.50	6.30	19.60	6.70	4.60	1.50	2.00	.10	-.20	-1.00	.40	2.90
19.....	3.40	6.20	19.70	5.70	3.50	.90	1.33	-.10	-.20	-.90	.45	2.60
20.....	3.35	5.55	18.15	5.00	3.00	.60	1.28	-.08	-.30	-.80	.50	2.00
21.....	3.40	6.00	16.00	4.30	2.70	.40	1.20	-.08	-.50	-.50	.40	2.10
22.....	4.30	7.95	13.60	3.90	2.30	2.60	3.70	-.05	-.30	-.55	.45	2.20
23.....	6.25	9.62	11.30	3.70	1.80	2.10	6.05	-.15	-.40	.50	.65	3.30
24.....	8.30	11.25	9.10	3.50	1.70	1.40	5.80	.50	-.35	.80	.45	5.30
25.....	6.45	12.15	7.80	3.40	1.80	1.00	4.50	.60	-.40	.70	.40	6.10
26.....	4.80	13.30	7.00	3.10	1.60	.80	3.30	.62	-.50	.90	.35	4.20
27.....	4.30	13.75	6.20	3.20	1.50	.70	2.80	.40	-.60	.50	.45	4.00
28.....	4.40	13.00	5.40	3.00	1.90	.65	2.60	.23	-.65	.70	1.00	4.10
29.....	4.10	-----	4.90	2.80	2.00	1.10	2.25	.05	-.55	1.50	1.80	5.00
30.....	3.90	-----	4.70	2.70	1.60	1.09	2.60	.02	-.50	1.60	2.10	4.60
31.....	3.05	-----	4.50	-----	1.40	-----	2.30	.65	-----	1.30	-----	3.90
1898.												
1.....	3.40	3.30	1.80	7.30	4.50	5.70	1.80	1.20	8.30	1.60	1.70	4.70
2.....	3.00	3.25	1.65	9.20	3.70	6.10	1.10	2.15	6.30	1.20	2.20	5.30
3.....	2.90	3.10	1.55	8.90	3.40	5.00	.90	2.80	3.10	.80	2.30	5.20
4.....	2.70	2.80	1.70	7.00	2.85	4.10	.60	4.00	3.20	1.20	1.80	6.20
5.....	2.40	2.60	3.20	5.90	2.50	3.00	.50	3.20	3.10	1.30	1.70	8.50
6.....	2.20	2.40	5.00	6.20	2.30	2.40	1.90	2.30	2.80	1.40	2.90	11.00
7.....	2.25	2.30	7.30	8.00	3.00	2.00	7.50	1.80	2.60	1.30	2.50	12.50
8.....	2.12	2.30	7.00	9.80	4.60	1.70	9.90	1.60	2.10	1.20	2.60	13.00
9.....	2.00	2.40	4.90	9.10	7.10	1.50	9.60	1.30	2.60	1.60	2.70	11.30
10.....	1.90	2.20	4.00	6.40	7.80	1.30	8.50	1.00	3.20	1.50	2.90	9.40
11.....	2.00	2.10	3.70	5.50	6.50	1.10	11.20	.90	2.60	1.60	2.30	7.00
12.....	2.05	2.00	3.50	5.10	4.90	1.00	11.70	1.50	1.70	1.50	2.80	5.70
13.....	2.30	1.90	3.20	4.50	4.10	.80	10.70	2.10	1.50	1.40	1.50	5.00
14.....	2.75	1.90	2.90	4.10	4.00	1.50	8.80	4.10	1.30	1.10	1.40	4.50
15.....	2.70	2.00	3.60	4.00	3.60	1.00	7.90	4.20	1.00	1.00	1.60	4.10
16.....	2.60	1.70	5.00	3.80	3.30	1.90	6.30	3.40	.80	.80	1.70	3.60
17.....	2.40	1.70	5.80	3.50	5.95	3.30	5.20	2.40	.70	.50	2.10	3.40
18.....	2.90	1.60	4.70	3.30	8.40	5.60	4.30	2.30	.60	.70	2.30	3.10
19.....	3.00	1.55	4.20	3.10	9.80	5.40	4.20	2.10	.50	.60	2.50	3.20
20.....	2.73	1.50	4.00	2.80	9.00	5.50	3.70	2.50	.50	2.60	4.30	3.30
21.....	2.60	1.60	3.60	2.60	7.20	6.70	4.20	5.30	.50	3.00	4.90	3.70
22.....	2.60	2.30	3.40	2.40	5.70	6.30	3.15	6.50	.40	2.80	5.50	5.00
23.....	2.70	2.40	3.00	2.20	4.60	5.30	2.50	6.00	.60	2.30	4.30	5.70
24.....	2.55	2.50	2.70	2.00	5.10	4.10	2.40	5.30	4.70	1.90	3.70	6.30
25.....	2.70	2.45	2.40	1.90	8.90	3.10	2.20	5.50	7.30	2.30	3.40	6.00
26.....	3.00	2.30	2.50	2.30	11.00	2.60	1.90	4.60	6.20	2.00	3.20	5.60
27.....	3.95	2.00	2.40	2.90	12.80	2.00	2.00	2.80	4.00	2.70	3.20	5.00
28.....	5.90	1.70	2.30	4.20	13.70	2.30	1.50	3.20	2.80	2.50	2.90	4.50
29.....	5.40	-----	2.30	5.30	12.40	2.50	1.40	4.50	2.20	2.80	3.00	4.20
30.....	4.20	-----	2.20	5.20	9.10	2.70	1.30	8.80	2.10	2.70	3.70	3.80
31.....	3.50	-----	2.50	-----	6.50	-----	1.30	8.90	-----	1.30	-----	3.50

DAILY GAGE HEIGHT, IN FEET, OF TAR RIVER AT TARBORO, N. C., FOR 1899-1900.

1899.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1	3.20	6.30	15.00	8.60	4.60	2.40	1.00	10.00	0.60	70	4.30	3.70
2	3.10	7.20	14.80	7.80	4.10	3.50	1.00	10.60	.50	30	6.50	2.80
3	3.40	8.30	15.40	7.20	3.90	3.00	.95	9.60	.40	40	9.30	2.70
4	3.70	8.50	16.70	6.30	4.00	2.90	1.00	7.70	.30	90	9.70	3.00
5	3.50	8.90	16.50	7.00	3.90	3.00	.95	5.50	.60	80	6.50	3.20
6	3.30	12.50	17.80	8.00	3.80	2.50	.70	4.50	.50	1.40	5.70	2.80
7	3.40	15.70	18.30	8.90	3.60	2.00	3.20	4.00	.40	2.20	5.20	2.60
8	3.50	18.60	18.60	11.70	3.50	1.60	2.50	3.70	.50	00	4.60	2.50
9	3.40	21.90	18.40	14.50	3.60	1.50	2.00	4.50	.70	8.70	4.20	2.30
10	4.30	24.10	16.40	16.50	3.70	3.00	1.50	4.90	3.00	7.30	3.60	2.30
11	3.40	25.00	13.80	17.80	3.80	2.80	1.60	3.80	1.60	6.80	3.40	2.00
12	3.30	Ice.	11.10	18.30	3.60	2.50	2.50	3.10	3.60	6.00	3.00	2.20
13	3.70	Ice.	9.00	17.00	3.50	5.40	1.60	2.60	5.00	5.20	2.70	2.40
14	4.80	Ice.	8.20	14.40	4.30	7.60	1.40	3.00	3.30	4.30	2.60	3.00
15	6.60	14.75	9.80	10.70	4.00	9.30	1.10	4.10	2.10	3.50	2.40	3.70
16	8.60	11.70	13.80	8.00	4.30	10.60	1.00	3.80	1.60	3.00	2.30	3.50
17	10.30	11.80	16.70	7.00	3.70	9.50	.90	4.30	1.50	2.70	2.40	2.90
18	10.40	14.10	19.00	6.20	3.10	9.80	1.10	5.20	1.10	2.40	2.20	2.60
19	9.10	17.00	20.90	5.80	2.80	8.80	1.40	6.00	1.00	2.20	2.00	2.50
20	8.30	19.00	21.00	5.40	2.60	5.30	3.80	5.40	.80	2.00	1.80	2.40
21	7.00	22.00	19.70	5.50	2.60	3.70	3.20	4.80	.70	.80	2.10	2.30
22	5.90	23.00	17.50	5.30	2.60	3.00	2.30	4.20	.62	1.60	2.00	2.50
23	5.30	23.40	16.30	5.00	2.70	2.40	1.70	3.00	.50	.50	1.90	2.10
24	4.90	23.10	13.70	4.60	2.70	2.00	1.30	2.80	.60	.40	1.80	2.90
25	4.50	22.00	10.00	4.30	2.60	1.50	1.50	2.50	1.30	1.80	1.90	5.40
26	4.40	20.50	8.60	4.10	2.70	1.40	2.60	1.80	1.00	1.40	2.00	7.80
27	4.50	18.20	7.80	4.30	2.50	1.50	3.90	1.70	.50	1.30	1.90	8.50
28	4.70	16.30	7.50	5.40	2.30	1.40	6.90	1.50	3.50	1.10	2.20	6.50
29	4.10		7.40	7.50	1.90	1.00	8.20	1.40	3.80	1.30	2.40	5.40
30	4.20		7.90	6.20	2.10	.98	8.50	1.10	2.60	2.50	2.70	5.00
31	4.30		8.50		1.70		9.45	.80		3.20		4.10
1900.												
1	3.7	4.0	10.0	8.6	5.0	2.6	2.0	1.7	0.8	-0.2	-0.3	0.8
2	3.0	3.8	10.5	9.0	4.5	2.1	1.3	1.3	.4	-.2	-.2	.7
3	2.9	3.7	12.3	9.1	4.6	2.0	1.5	1.6	.3	-.2	-.3	.6
4	2.6	3.6	13.5	8.0	4.3	1.9	1.6	1.8	.2	-.2	1.7	1.3
5	2.5	3.5	14.3	7.5	4.0	1.8	1.0	.7	.0	-.2	3.4	1.2
6	2.6	4.8	13.0	7.6	3.7	1.5	1.1	.6	.0	-.1	4.5	1.6
7	3.4	6.0	10.5	7.3	3.4	1.3	.7	.5	.0	-.2	5.1	3.7
8	3.5	5.9	8.3	6.0	3.2	1.2	.6	.2	-.1	-.2	3.8	3.0
9	3.4	5.4	7.8	5.3	3.0	1.3	.7	.1	-.1	1.2	3.4	2.1
10	4.3	5.0	9.0	5.0	3.3	1.5	.6	.0	-.1	.5	2.0	1.6
11	3.4	6.1	11.2	4.7	3.6	2.0	.4	.0	-.1	.4	1.6	1.7
12	3.3	7.8	12.2	4.5	4.0	1.8	.3	.0	-.2	.3	1.4	1.5
13	3.7	10.6	11.4	5.6	3.1	1.3	.4	.0	-.2	.4	1.3	1.2
14	9.4	12.8	9.8	8.7	2.8	1.4	.3	.0	-.2	.2	1.0	.9
15	10.5	14.5	8.0	9.8	2.5	1.0	.2	.1	-.2	.1	.6	.8
16	9.5	15.8	7.3	9.3	2.4	1.4	1.6	.3	-.2	.0	.4	.7
17	7.3	17.0	8.3	8.3	2.2	2.5	1.4	1.3	-.2	.0	.6	.6
18	6.2	18.0	9.1	7.2	2.0	3.5	.7	.5	.5	.0	.4	1.1
19	5.9	16.5	9.5	6.0	4.0	6.0	.3	1.0	1.0	.0	.2	.7
20	6.7	13.7	8.5	9.4	5.0	7.3	.2	.7	.4	.0	.7	.6
21	8.9	9.8	7.3	10.8	4.8	5.5	.1	.6	.2	-.1	.4	1.2
22	9.5	8.0	7.1	13.2	4.2	4.3	.0	.4	.0	-.1	.2	2.1
23	10.3	10.0	6.5	14.5	3.4	3.5	.0	.2	.0	-.1	.1	3.7
24	9.0	11.5	6.0	15.3	3.0	3.5	.0	.1	.0	-.2	.3	4.6
25	7.3	13.9	6.1	13.8	4.5	4.3	.0	.0	-.1	-.2	.4	4.0
26	6.4	13.7	6.3	11.0	5.9	6.5	.5	.1	-.1	-.1	.5	2.8
27	5.5	12.6	8.3	8.6	5.6	5.0	1.0	.2	-.1	-.1	.4	2.6
28	5.0	11.9	9.5	7.2	4.5	4.5	1.2	.0	-.1	-.1	.3	2.2
29	4.6		10.0	6.0	3.6	3.4	4.5	.0	-.1	-.2	1.3	2.0
30	4.5		9.1	5.4	3.0	2.6	3.0	.4	-.1	-.3	1.2	2.5
31	4.4		7.8		2.8		2.3	.6		-.3		3.2

RATING TABLE FOR TAR RIVER AT TARBORO, N. C., FOR 1896, 1897-1898, 1899 AND 1900.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1896.							
0.00	280	4.00	1,880	8.00	4,400	12.00	7,260
0.20	324	4.20	2,000	8.20	4,540	12.20	7,420
0.40	368	4.40	2,120	8.40	4,680	12.40	7,580
0.60	412	4.60	2,240	8.60	4,820	12.60	7,740
0.80	456	4.80	2,360	8.80	4,960	12.80	7,920
1.00	500	5.00	2,480	9.00	5,100	13.00	8,100
1.20	560	5.20	2,600	9.20	5,240	13.20	8,280
1.40	630	5.40	2,720	9.40	5,380	13.40	8,460
1.60	710	5.60	2,840	9.60	5,520	13.60	8,640
1.80	790	5.80	2,970	9.80	5,660	14.00	9,000
2.00	870	6.00	3,100	10.00	5,800	14.50	9,480
2.20	950	6.20	3,220	10.20	5,940	15.00	9,960
2.40	1,035	6.40	3,340	10.40	6,080	15.50	10,440
2.60	1,120	6.60	3,460	10.60	6,220	16.00	10,940
2.80	1,220	6.80	3,580	10.80	6,360	16.50	11,420
3.00	1,320	7.00	3,710	11.00	6,500	17.00	11,920
3.20	1,420	7.20	3,840	11.20	6,640	17.50	12,400
3.40	1,530	7.40	3,980	11.40	6,780	18.00	12,900
3.60	1,640	7.60	4,120	11.60	6,940	-----	-----
3.80	1,760	7.80	4,260	11.80	7,100	-----	-----
1897-1898.							
-1.00	170	0.00	270	3.50	1,680	11.00	6,370
-0.90	177	0.20	310	4.10	1,935	12.00	7,180
-0.80	185	0.40	360	4.50	2,197	13.00	8,050
-0.70	192	0.60	410	5.00	2,460	14.00	8,950
-0.60	200	0.80	470	5.50	2,735	15.00	9,900
-0.50	210	1.00	540	6.00	3,015	16.00	10,900
-0.40	220	1.50	730	7.00	3,600	17.00	11,900
-0.30	230	2.00	950	8.00	4,250	18.00	12,900
-0.20	240	2.50	1,180	9.00	4,960	19.00	13,900
-0.10	255	3.00	1,430	10.00	5,650	20.00	14,900
1899.							
0.4	370	3.0	1,200	6.5	3,200	13.0	8,470
0.6	410	3.2	1,300	7.0	3,550	13.5	8,920
0.8	453	3.4	1,400	7.5	3,910	14.0	9,370
1.0	500	3.6	1,500	8.0	4,285	14.5	9,820
1.2	555	3.8	1,600	8.5	4,685	15.0	10,270
1.4	615	4.0	1,700	9.0	5,085	16.0	11,170
1.6	675	4.2	1,810	9.5	5,500	17.0	12,070
1.8	735	4.4	1,920	10.0	5,915	18.0	12,970
2.0	800	4.6	2,030	10.5	6,330	19.0	13,870
2.2	875	4.8	2,140	11.0	6,750	20.0	14,850
2.4	953	5.0	2,250	11.5	7,175	25.0	19,850
2.6	1,031	5.5	2,550	12.0	7,600	-----	-----
2.8	1,110	6.0	2,865	12.5	8,025	-----	-----
1900.							
0.2	290	2.8	1,240	6.0	2,865	12.5	8,070
0.4	350	3.0	1,320	6.5	3,205	13.0	8,490
0.6	410	3.2	1,400	7.0	3,580	13.5	8,925
0.8	480	3.4	1,480	7.5	3,955	14.0	9,370
1.0	550	3.6	1,565	8.0	4,330	14.5	9,820
1.2	620	3.8	1,655	8.5	4,745	15.0	10,270
1.4	690	4.0	1,745	9.0	5,160	16.0	11,170
1.6	760	4.2	1,845	9.5	5,575	17.0	12,070
1.8	840	4.4	1,945	10.0	5,990	18.0	12,970
2.0	920	4.6	2,045	10.5	6,405	19.0	13,870
2.2	1,000	4.8	2,155	11.0	6,820	20.0	14,850
2.4	1,080	5.0	2,265	11.5	7,235	-----	-----
2.6	1,160	5.5	2,565	12.0	7,650	-----	-----

**ESTIMATED MONTHLY DISCHARGE OF TAR RIVER AT TARBORO, N. C.**  
 [Drainage area, 2,290 square miles.]

Month.	Discharge in Second-feet.			Total in Acre-feet.	Run-off.	
	Maxi- mum.	Mini- mum.	Mean.		Depth in Inches.	Second- feet per Square Mile.
<b>1896.</b>						
July 26 to 31.....	1,618	774	1,268	15,090	0.13	0.55
August.....	1,574	390	628	38,614	0.31	0.27
September.....	3,910	302	1,190	70,809	0.58	0.52
October.....	2,000	408	703	43,226	0.35	0.30
November.....	1,910	476	842	50,102	0.41	0.37
December.....	9,460	1,420	3,739	229,904	1.88	1.63
<b>1897.</b>						
January.....	4,460	1,155	1,814	111,539	0.91	0.79
February.....	8,725	1,480	4,888	271,466	2.22	2.13
March.....	14,600	2,197	6,789	417,440	3.41	2.96
April.....	9,800	1,280	3,636	216,357	1.77	1.59
May.....	3,915	690	1,580	97,150	0.79	0.69
June.....	1,280	360	689	40,999	0.33	0.30
July.....	3,725	310	1,198	73,665	0.60	0.52
August.....	860	247	399	24,533	0.20	0.17
September.....	2,460	196	490	29,155	0.23	0.21
October.....	770	170	295	18,139	0.15	0.13
November.....	2,250	347	674	40,103	0.32	0.29
December.....	3,072	770	1,430	87,928	0.71	0.62
The year.....	14,600	170	1,990	1,428,476	11.64	0.87
<b>1898.</b>						
January.....	2,957	905	1,380	84,853	0.69	0.60
February.....	1,580	730	1,051	58,370	0.48	0.46
March.....	3,787	750	1,697	104,345	0.85	0.74
April.....	5,510	905	2,523	150,129	1.23	1.10
May.....	8,680	1,085	3,438	211,394	1.73	1.50
June.....	3,420	470	1,600	95,207	0.78	0.70
July.....	6,925	385	2,419	148,738	1.22	1.06
August.....	4,880	505	1,733	106,553	0.87	0.76
September.....	4,460	360	1,356	80,688	0.65	0.59
October.....	1,430	385	816	50,174	0.41	0.36
November.....	2,735	690	1,338	79,617	0.64	0.58
December.....	8,060	1,480	3,110	191,227	1.57	1.36
<b>1899.</b>						
January.....	6,247	1,250	2,440	150,030	1.23	1.07
February.....	19,850	3,060	11,874	659,449	5.40	4.19
March.....	15,850	3,835	9,537	536,407	4.80	4.16
April.....	13,240	1,755	5,060	301,031	2.47	2.21
May.....	2,030	705	1,354	83,254	0.68	0.59
June.....	6,413	500	1,907	113,474	0.92	0.83
July.....	5,459	430	1,250	76,860	0.63	0.55
August.....	6,413	453	2,028	124,697	1.02	0.89
September.....	2,250	350	711	42,307	0.35	0.31
October.....	4,845	453	1,325	81,471	0.67	0.58
November.....	5,666	735	1,598	95,098	0.78	0.70
December.....	4,685	800	1,524	93,707	0.76	0.66
<b>1900.</b>						
January.....	6,405	1,120	2,864	176,101	1.44	1.25
February.....	12,970	1,520	5,952	330,557	2.70	2.60
March.....	9,640	2,865	5,445	334,800	2.75	2.38
April.....	10,540	1,995	4,802	285,739	2.34	2.10
May.....	2,805	920	1,664	102,315	0.84	0.73
June.....	3,805	550	1,376	81,878	0.67	0.60
July.....	1,995	230	552	33,941	0.28	0.24
August.....	840	230	384	23,611	0.20	0.17
September.....	550	134	233	13,864	0.11	0.10
October.....	620	87	210	12,912	0.10	0.09
November.....	2,325	87	659	39,213	0.32	0.29
December.....	2,045	410	880	54,109	0.44	0.38
The year.....	12,970	87	2,085	1,489,040	12.19	0.91

## NEUSE RIVER DRAINAGE BASIN.

## DESCRIPTION OF BASIN.

The Neuse River is formed in the northwest corner of Wake County, North Carolina, by the union of three small streams, the Eno, Flat, and Little rivers, which themselves take their rise in Person and Orange counties. The Neuse flows in a general southeasterly direction through Wake, Johnston, Wayne, Lenoir, and Craven counties, emptying into Pamlico Sound below New Bern, its general course, in its lower and navigable portion, being more nearly east. It forms for a short distance the boundary between Granville and Durham counties, and, near its mouth, between Pitt and Pamlico on its left and lower Craven on its right. Its length above New Bern, measured in a straight line, is about 150 miles, but it is much greater following the river, which is very tortuous in places. The principal towns on the stream are New Bern, Kinston, Goldsboro, Smithfield, and Hillsboro, the last being on the Eno. The head of navigation on the river is Smithfield, about 160 miles above New Bern, and the Government has, at intervals, been engaged in improving the river up to this point.

The area drained by the Neuse comprises about 5,300 square miles. That part above New Bern measures about 4,250 square miles. The principal tributaries of the river enter from the north, viz., the Contentnea Creek (mouth about 30 miles above New Bern) and Little River (mouth just above Goldsboro, 97½ miles above New Bern), draining, respectively, about 990 and 325 square miles, approximately. The river crosses the fall line near Smithfield, and below that point there is no water-power. The fall at Smithfield, however, is not very great, and the fall line is less prominent than in the case of the Roanoke and the Tar, the ledge of rock, forming the falls at Weldon and Rocky Mount, showing itself only very slightly on the Neuse.

## MEASUREMENTS OF STREAM FLOW.

## NEUSE RIVER AT SELMA, N. C.

This station is located on the Southern Railway bridge, about 3 miles from Selma, North Carolina. It was established by E. W. Myers, July 29, 1896. The bed of the river here is sandy and muddy and is liable to change in high water. The flow is obstructed by one pier of the bridge; the channel is straight, the current moderately swift and confined to one channel. The gage rod was moved February 6, 1899, to the highway bridge, crossing the river about 200 yards below. The zero of the gage rod is 33.7 feet west of the center rod of the truss of the bridge, and on the downstream side. The outer rim of the pulley wheel is 4.75 feet east of the zero of the gage rod, and the distance from the end of the weight to the marker on wire is 35.00 feet.

NEUSE RIVER DRAINAGE BASIN.

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DISCHARGE MEASUREMENTS OF NEUSE RIVER AT SELMA, N. C.

Date.	Hydrographer.	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1896.					
July 29	E. W. Myers.....	285	1.28	1.18	333
Sept. 5	do.....	215	0.94	0.30	203
Sept. 19	A. P. Davis.....	220	0.56	0.00	123
1897.					
Jan. 24	E. W. Myers.....	1,038	1.74	8.00	1,810
Feb. 23	do.....	1,842	2.19	10.60	4,052
Mar. 10	do.....	1,379	1.92	7.95	2,639
May 18	do.....	497	1.58	2.40	789
July 27	do.....	466	1.48	1.60	694
Oct. 1	do.....	146	0.75	-0.30	109
1898.					
Jan. 9	E. W. Myers.....	327	1.30	1.20	426
Aug. 31	do.....	1,208	2.40	6.75	2,902

Date.	Hydrographer.	Gage Height (Feet).	Discharge (Second- feet).
1899.			
Feb. 6	E. W. Myers.....	15.68	7,807
May 23	do.....	4.28	1,262
June 5	do.....	3.10	773
Oct. 12	do.....	1.79	574
Nov. 26	do.....	1.30	356
1900.			
Feb. 8	E. W. Myers.....	3.40	1,117
Apr. 12	do.....	3.80	1,076
Apr. 24	do.....	17.05	9,027
May 17	do.....	1.70	461
June 27	do.....	3.00	590
Aug. 10	do.....	0.61	139
Nov. 6	do.....	4.60	1,278
Nov. 22	do.....	0.90	243

DAILY GAGE HEIGHT, IN FEET, OF NEUSE RIVER AT SELMA, N. C., FOR 1896.

Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....		2.00	0.30	5.00	0.60	3.70	17.....		0.90	0.06	0.50	0.70	9.00
2.....		2.00	.30	7.20	.60	3.50	18.....		.90	.05	.40	.70	8.60
3.....		2.00	.35	2.30	.60	3.00	19.....		1.10	.00	.40	.60	5.50
4.....		1.90	.40	.90	.40	2.80	20.....		1.00	.00	.30	.60	4.60
5.....		1.20	.30	.50	1.20	2.60	21.....		1.00	1.04	.40	.60	3.50
6.....		1.00	.30	.50	4.80	2.50	22.....		.50	.04	.60	.50	3.00
7.....		1.00	.30	.30	4.40	3.00	23.....		.40	5.04	.90	.50	2.80
8.....		1.00	.60	.20	2.30	4.00	24.....		.50	1.07	.70	.50	2.00
9.....		.90	.50	.20	1.50	3.80	25.....		2.10	.07	.50	.50	1.90
10.....		5.05	.30	.10	1.20	3.50	26.....		2.00	.07	.40	.50	1.80
11.....		5.50	.20	.20	.80	2.60	27.....		1.10	.40	.30	.50	1.50
12.....		5.50	.20	.50	.80	2.00	28.....		1.00	.30	.30	.50	1.50
13.....		2.25	.01	.70	1.30	2.00	29.....	1.10	1.00	.10	.30	.50	1.40
14.....		1.50	.01	1.70	1.20	2.00	30.....	1.00	.50	1.50	.40	.70	1.30
15.....		1.20	.01	1.00	.90	3.00	31.....	1.00	.30		.40		1.20
16.....			.80	.01	.60	.80							

## WATER-POWERS OF NORTH CAROLINA.

DAILY GAGE HEIGHT, IN FEET, OF NEUSE RIVER AT SELMA, N. C., FOR 1897-1898.

1897.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1	1.30	1.70	3.90	2.60	2.20	6.00	0.80	0.70	0.10	-0.30	0.00	1.80
2	1.40	2.80	3.70	2.50	3.20	4.50	1.20	.60	.10	-.30	.00	1.70
3	1.30	6.70	3.40	2.40	4.00	2.90	.80	.50	.10	-.30	.00	1.50
4	1.20	7.40	3.10	2.90	5.90	2.30	.60	.40	.10	-.30	.45	1.40
5	1.20	8.60	2.80	3.40	3.80	1.70	.50	.20	.20	-.30	.50	2.30
6	1.20	5.00	2.80	10.10	2.20	1.80	.40	.20	.20	-.30	.60	2.30
7	1.20	12.40	5.20	9.70	2.00	3.20	.70	.20	.10	-.30	1.00	2.00
8	1.10	13.20	9.90	5.80	1.90	2.60	.60	.20	.10	-.30	1.00	1.70
9	1.10	13.20	10.50	4.70	1.50	1.90	.60	.20	.10	-.30	1.00	1.30
10	1.10	7.50	8.50	14.50	1.60	1.60	1.20	.20	.10	-.30	.50	1.00
11	1.10	5.70	9.00	13.90	1.60	1.40	1.30	.20	.10	-.30	.80	1.00
12	1.10	4.40	11.20	10.50	2.20	2.10	2.20	.10	.10	-.30	.70	1.20
13	1.20	4.20	15.80	7.00	2.00	1.10	5.50	.10	.10	-.30	.40	1.10
14	1.30	4.40	14.70	5.20	5.00	1.00	5.30	.10	.10	-.30	.40	1.00
15	1.00	4.50	16.50	3.80	8.80	.90	4.80	.10	.10	-.30	.40	1.10
16	1.70	4.80	16.80	3.70	9.60	.80	2.30	.10	.10	-.30	.40	3.00
17	1.70	4.70	15.70	3.50	4.30	.70	1.20	.20	.10	-.40	.40	2.70
18	1.80	4.50	15.00	3.20	2.60	.60	1.10	.20	.10	-.40	.40	1.90
19	2.20	4.40	11.70	2.90	2.30	1.10	1.00	.10	-.10	-.30	.30	1.20
20	2.50	3.00	8.30	2.60	2.00	.50	1.30	.10	-.10	-.30	.30	1.30
21	2.90	3.50	8.20	2.40	1.90	2.20	4.10	.10	-.10	.10	.30	2.30
22	8.30	5.50	6.20	2.20	1.80	1.40	5.50	.80	-.10	.40	.30	4.20
23	9.30	10.60	4.60	2.10	1.60	1.10	5.60	1.40	-.10	.10	.20	5.80
24	8.00	11.40	4.20	2.00	1.60	.90	2.50	1.80	-.10	.20	.20	6.00
25	4.30	11.30	3.70	2.00	1.80	2.00	1.50	1.40	-.10	.20	.20	4.50
26	4.00	7.70	3.40	1.90	2.00	1.30	2.30	.90	-.30	.30	.20	3.00
27	3.80	7.30	3.10	1.90	2.40	.80	1.90	.50	-.30	.40	.20	3.50
28	3.40	4.50	3.00	1.90	1.80	.60	1.60	.30	-.30	.30	.20	4.10
29	2.80		2.70	1.80	1.40	.70	1.60	.10	-.30	.30	1.90	4.50
30	2.50		2.60	1.80	1.60	1.30	1.10	.10	-.30	.20	2.30	4.20
31	2.20		2.60		1.50		.80	.10		.00		3.10
1898.												
1	1.70	1.30	1.00	11.40	1.50	2.70	0.50	0.70	6.00	0.30	3.00	2.50
2	1.70	1.30	1.00	10.20	1.20	2.00	.50	.80	5.80	.30	3.60	3.00
3	1.50	1.30	1.00	6.70	1.00	1.40	.60	1.10	1.80	.20	2.00	2.80
4	1.30	1.30	1.40	6.00	.80	1.00	.70	1.00	1.00	.30	1.60	7.30
5	1.20	1.30	1.50	7.20	.60	.90	.70	.60	4.50	.50	1.20	11.30
6	1.10	1.20	1.80	10.70	.80	.80	3.00	.50	3.20	.60	1.20	11.40
7	1.00	1.10	8.30	8.00	4.00	.70	5.90	.50	4.10	.70	1.20	10.70
8	.90	1.10	3.70	7.00	6.90	.60	6.00	.50	3.40	2.00	1.30	5.50
9	1.20	1.10	3.20	6.00	5.40	.50	5.80	.50	2.10	1.00	1.40	3.10
10	1.20	1.00	2.00	2.90	4.10	.50	5.30	.60	3.40	1.10	1.40	3.00
11	1.00	1.10	2.50	2.80	3.00	.50	5.00	.50	3.00	1.10	1.50	3.00
12	1.00	1.00	1.70	2.70	3.60	5.00	2.50	1.80	2.80	1.20	1.60	3.20
13	1.20	1.00	1.60	2.00	2.80	4.00	2.00	3.20	2.40	1.30	1.70	3.30
14	1.50	1.00	1.80	2.00	2.00	3.40	2.00	3.30	2.00	1.00	1.90	2.30
15	1.50	1.00	2.50	1.80	8.90	3.00	1.90	3.40	1.80	.80	2.00	1.80
16	1.20	1.00	5.10	1.80	8.00	2.00	1.80	3.00	1.00	.60	2.00	1.60
17	1.30	1.00	6.00	1.70	7.00	1.40	1.50	2.80	1.00	.40	2.80	1.50
18	1.60	1.00	5.00	1.50	5.40	1.50	2.00	2.80	1.00	.90	3.00	1.50
19	1.30	.60	4.20	1.40	3.60	1.80	4.00	1.30	1.00	1.40	5.40	1.40
20	1.30	1.00	3.70	1.30	2.70	2.00	7.00	9.60	1.10	1.80	5.80	1.60
21	1.20	1.00	2.00	1.20	2.00	2.20	5.00	10.40	1.20	1.90	5.00	2.30
22	1.60	1.80	1.70	1.10	3.00	2.00	2.70	6.30	1.30	2.30	4.50	2.40
23	1.40	2.50	1.40	1.20	5.00	1.80	2.00	2.60	4.00	1.90	3.00	2.40
24	1.30	1.80	1.20	1.30	9.00	1.00	2.50	12.00	1.50	2.80	2.50	
25	1.40	1.40	2.00	1.50	10.00	.90	.90	2.80	13.00	1.60	2.20	2.30
26	3.50	1.30	2.50	1.70	11.00	.50	.80	1.60	9.40	1.80	2.00	2.40
27	7.00	1.20	1.80	2.00	7.00	.50	.80	1.80	6.10	1.60	1.90	2.00
28	5.80	1.00	2.00	3.70	5.50	.50	.70	8.90	1.00	1.20	1.80	1.70
29	3.40		3.00	5.00	4.00	.50	.70	5.40	1.00	1.00	2.00	1.60
30	2.30		7.00	4.20	3.50	.40	.70	9.10	.80	1.40	2.50	1.50
31	1.90		9.00		3.00		.70	9.00		2.60		1.40

## NEUSE RIVER DRAINAGE BASIN.

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DAILY GAGE HEIGHT, IN FEET, OF NEUSE RIVER AT SELMA, N. C., FOR 1899-1900.

1899.	Jan.	Feb.	Mar.	Apr.	May	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	1.40	6.50	13.39	4.79	1.84	4.44	1.21	10.68	0.95	1.43	10.50	1.10
2.....	1.30	5.90	12.99	4.99	1.69	3.54	1.21	9.58	.85	1.23	11.20	1.50
3.....	1.30	5.60	14.19	4.99	2.69	3.14	1.11	7.98	.75	1.02	11.40	1.60
4.....	2.00	6.00	15.48	5.78	2.89	3.23	1.11	6.18	.75	.72	11.20	1.40
5.....	2.50	11.30	18.28	6.28	3.13	3.13	1.21	2.18	.85	.52	4.20	1.20
6.....	2.00	13.40	17.98	8.48	2.38	2.63	1.31	2.28	.65	.62	3.30	1.20
7.....	2.10	19.90	17.87	9.77	2.43	1.83	1.40	2.68	.45	3.92	2.70	1.20
8.....	7.10	20.09	16.47	13.97	3.13	1.83	2.50	3.18	.55	6.82	2.30	1.20
9.....	6.50	20.98	13.97	16.67	3.42	2.63	3.00	3.67	.65	7.12	2.10	1.20
10.....	6.40	20.28	10.06	14.76	4.02	5.23	2.60	3.57	.55	7.42	2.10	1.20
11.....	3.50	18.97	8.16	11.76	4.77	7.03	2.40	3.47	.44	3.92	2.00	1.20
12.....	3.40	12.37	9.26	7.06	4.47	7.83	1.60	2.57	.84	2.72	1.50	1.40
13.....	3.20	10.36	9.15	4.95	3.76	9.73	1.40	2.47	.94	2.12	1.40	1.90
14.....	3.70	9.96	10.35	4.75	5.26	6.27	1.10	3.07	1.04	1.51	2.00	3.80
15.....	8.90	9.55	11.95	4.55	5.31	3.22	1.00	3.17	.94	1.31	2.00	3.20
16.....	8.90	6.45	18.05	4.54	4.46	2.62	1.00	2.57	.84	1.11	1.80	2.40
17.....	8.00	13.55	16.94	4.24	3.26	2.42	1.60	1.67	.74	.71	1.00	1.30
18.....	6.20	15.54	14.94	4.24	3.05	2.32	4.39	1.77	.64	1.01	1.50	1.20
19.....	5.20	17.34	18.23	4.03	4.10	2.02	5.59	1.67	.64	1.21	1.50	1.00
20.....	4.20	18.13	17.73	3.73	5.90	1.82	4.79	1.06	.74	1.31	1.50	1.00
21.....	3.20	18.73	12.53	3.63	5.35	1.72	2.79	.96	.64	1.31	1.40	1.50
22.....	2.40	17.02	9.82	3.52	4.80	1.62	2.39	.96	.63	1.31	1.30	1.90
23.....	2.50	17.32	8.02	3.32	4.40	1.52	1.59	.86	.73	1.31	1.20	3.00
24.....	2.50	15.32	6.82	3.12	3.74	1.42	1.29	.86	.83	1.11	1.10	3.00
25.....	2.40	14.21	5.41	3.21	3.44	1.42	3.59	.96	.83	1.01	1.00	2.20
26.....	3.10	15.51	5.21	3.41	2.84	1.31	6.59	.96	1.43	.80	1.00	1.90
27.....	3.10	15.20	5.11	4.21	2.44	1.31	10.19	.96	1.67	.70	.90	1.40
28.....	3.00	14.00	5.60	4.70	2.14	1.31	7.71	.96	2.53	.70	.80	1.20
29.....	2.30	-----	6.50	5.50	1.94	1.21	5.68	.86	2.87	.80	.70	1.20
30.....	2.40	-----	6.90	1.95	3.04	1.21	6.58	.96	1.53	.80	.70	1.20
31.....	2.40	-----	7.60	-----	5.04	-----	8.28	.95	-----	10.70	-----	1.30
1900.												
1.....	1.4	1.8	8.7	3.8	6.3	1.5	4.7	2.0	1.8	0.7	0.1	1.0
2.....	1.9	1.7	12.5	3.6	5.8	1.5	3.2	1.8	1.5	.7	.2	.9
3.....	2.1	1.5	12.8	3.5	4.6	1.4	2.0	1.6	1.0	.7	1.4	1.0
4.....	1.5	2.0	13.1	3.5	3.8	1.3	1.8	1.3	0.8	.6	2.4	1.4
5.....	1.4	2.5	8.4	3.4	3.2	1.2	1.5	1.2	.7	.5	4.2	4.3
6.....	1.2	3.1	7.0	3.4	3.1	1.2	1.4	1.0	.6	.4	6.0	7.1
7.....	1.0	3.0	6.4	3.3	2.8	1.3	1.3	.9	.6	.3	3.1	5.2
8.....	1.1	3.0	7.2	3.3	2.5	1.4	1.3	.9	.5	.3	2.3	3.1
9.....	2.1	3.3	8.4	3.2	3.4	1.6	1.2	.8	.5	.3	1.7	2.6
10.....	3.0	3.3	9.6	3.0	4.0	1.7	1.1	.7	.4	.4	1.5	2.0
11.....	5.9	7.6	9.0	5.3	3.0	1.6	1.0	.6	.4	.5	1.4	1.8
12.....	9.7	9.8	8.4	7.8	2.2	1.5	.8	.6	.4	.6	1.4	1.7
13.....	10.5	14.6	7.0	11.2	2.1	1.4	1.0	.5	.4	.7	1.3	1.6
14.....	11.2	17.0	5.6	8.1	2.0	1.4	1.4	.5	.4	.7	1.2	1.2
15.....	9.6	17.8	4.0	4.5	1.8	1.3	1.2	.4	1.5	.7	1.2	2.0
16.....	7.7	17.0	7.8	5.9	1.7	1.7	1.1	.8	5.5	.8	1.1	1.6
17.....	3.5	16.0	10.0	8.2	1.8	1.8	1.0	2.0	3.8	.8	1.0	1.5
18.....	3.2	12.4	8.7	10.4	3.0	1.8	.9	2.4	2.1	.7	.9	1.3
19.....	2.8	8.6	6.9	11.0	8.0	2.0	.8	1.0	1.0	.6	.9	1.2
20.....	4.2	4.0	5.1	12.3	7.2	2.1	.7	.8	.9	.5	.9	1.0
21.....	6.5	5.0	4.8	14.5	5.6	1.7	.6	.6	.8	.4	.8	2.2
22.....	5.5	6.4	4.3	17.2	3.4	2.3	.8	.6	.7	.4	.8	3.4
23.....	4.2	8.5	3.0	18.2	2.0	4.6	1.8	.6	.7	.4	.8	5.2
24.....	3.5	12.1	3.7	17.0	2.5	5.1	3.6	.7	.7	.5	.8	3.8
25.....	3.3	10.2	3.7	13.8	3.3	6.1	5.3	.6	.7	.5	1.0	2.7
26.....	3.1	8.6	4.7	8.5	2.8	5.7	8.4	.7	.7	.3	2.0	2.2
27.....	2.8	6.8	4.9	4.7	2.5	4.3	12.0	.7	.7	.2	4.5	1.8
28.....	2.8	5.1	4.7	3.8	2.2	3.2	7.8	.6	.7	.1	3.2	1.6
29.....	2.2	-----	4.5	3.4	2.0	2.7	4.2	1.1	.7	.1	2.1	1.0
30.....	2.0	-----	4.3	3.3	1.9	3.7	2.9	4.0	.7	.1	1.6	2.0
31.....	1.9	-----	4.0	-----	1.7	-----	2.6	2.3	-----	.1	-----	4.3



RATING TABLE FOR NEUSE RIVER AT SELMA, N. C., FOR 1896, 1897 AND 1898.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1896.							
0.00	125	2.80	700	5.60	1,515	8.40	2,590
0.20	155	3.00	750	5.80	1,590	8.60	2,695
0.40	185	3.20	800	6.00	1,650	8.80	2,805
0.60	220	3.40	850	6.20	1,720	9.00	2,920
0.80	260	3.60	900	6.40	1,790	9.20	3,040
1.00	300	3.80	960	6.60	1,860	9.40	3,160
1.20	340	4.00	1,020	6.80	1,930	9.60	3,280
1.40	380	4.20	1,080	7.00	2,000	9.80	3,400
1.60	420	4.40	1,140	7.20	2,060	10.00	3,540
1.80	460	4.60	1,200	7.40	2,160	10.20	3,690
2.00	500	4.80	1,260	7.60	2,240	10.40	3,855
2.20	550	5.00	1,325	7.80	2,320	10.60	4,050
2.40	600	5.20	1,390	8.00	2,400	10.80	4,230
2.60	650	5.40	1,450	8.20	2,490	11.00	4,410
1897.							
-0.5	70	2.2	698	5.6	1,700	10.5	3,950
-0.4	75	2.4	754	5.8	1,760	11.0	4,260
-0.3	92	2.6	810	6.0	1,830	11.5	4,570
-0.2	110	2.8	866	6.2	1,900	12.0	4,890
-0.1	127	3.0	922	6.4	1,970	12.5	5,190
0.0	145	3.2	980	6.6	2,040	13.0	5,500
0.1	165	3.4	1,040	6.8	2,110	13.5	5,810
0.2	185	3.6	1,100	7.0	2,190	14.0	6,120
0.4	230	3.8	1,160	7.2	2,270	14.5	6,430
0.6	275	4.0	1,220	7.4	2,350	15.0	6,740
0.8	325	4.2	1,280	7.6	2,430	15.5	7,050
1.0	375	4.4	1,340	7.8	2,510	16.0	7,360
1.2	425	4.6	1,400	8.0	2,590	16.5	7,670
1.4	475	4.8	1,460	8.5	2,825	17.0	7,980
1.6	530	5.0	1,520	9.0	3,075	-----	-----
1.8	586	5.2	1,580	9.5	3,365	-----	-----
2.0	642	5.4	1,640	10.0	3,650	-----	-----
1898.							
0.0	145	2.3	732	5.2	2,066	9.8	4,590
0.1	165	2.4	762	5.4	2,172	10.0	4,700
0.2	185	2.5	792	5.6	2,280	10.2	4,810
0.3	207	2.6	822	5.8	2,390	10.4	4,920
0.4	230	2.7	855	6.0	2,500	10.6	5,030
0.5	252	2.8	890	6.2	2,610	10.8	5,140
0.6	275	2.9	930	6.4	2,720	11.0	5,250
0.7	300	3.0	972	6.6	2,830	11.2	5,360
0.8	325	3.1	1,017	6.8	2,940	11.4	5,470
0.9	350	3.2	1,062	7.0	3,050	11.6	5,580
1.0	375	3.3	1,110	7.2	3,160	11.8	5,690
1.1	400	3.4	1,160	7.4	3,270	12.0	5,800
1.2	425	3.5	1,210	7.6	3,380	12.5	6,075
1.3	450	3.6	1,260	7.8	3,490	13.0	6,350
1.4	475	3.7	1,310	8.0	3,600	13.5	6,625
1.5	502	3.8	1,360	8.2	3,710	14.0	6,900
1.6	530	3.9	1,410	8.4	3,820	14.5	7,175
1.7	558	4.0	1,460	8.6	3,930	15.0	7,450
1.8	586	4.2	1,500	8.8	4,040	15.5	7,725
1.9	614	4.4	1,660	9.0	4,150	16.0	8,000
2.0	642	4.6	1,760	9.2	4,260	-----	-----
2.1	672	4.8	1,860	9.4	4,370	-----	-----
2.2	702	5.0	1,960	9.6	4,480	-----	-----

NEUSE RIVER DRAINAGE BASIN.

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RATING TABLE FOR NEUSE RIVER AT SELMA, N. C., FOR 1899-1900.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1899.							
0.2	145	2.8	700	6.0	1,805	12.5	5,320
0.4	175	3.0	750	6.5	2,030	13.0	5,695
0.6	215	3.2	800	7.0	2,255	13.5	6,070
0.8	255	3.4	860	7.5	2,500	14.0	6,450
1.0	295	3.6	920	8.0	2,750	14.5	6,850
1.2	335	3.8	980	8.5	3,000	15.0	7,250
1.4	377	4.0	1,040	9.0	3,250	16.0	8,060
1.6	419	4.2	1,100	9.5	3,500	17.0	8,850
1.8	462	4.4	1,168	10.0	3,750	18.0	9,650
2.0	506	4.6	1,236	10.5	4,000	19.0	10,450
2.2	551	4.8	1,305	11.0	4,290	20.0	11,250
2.4	600	5.0	1,385	11.5	4,610	----	-----
2.6	650	5.5	1,555	12.0	4,960	----	-----
1900.							
0.2	150	2.8	714	6.0	1,780	12.5	5,325
0.4	184	3.0	770	6.5	1,980	13.0	5,700
0.6	218	3.2	830	7.0	2,190	13.5	6,075
0.8	252	3.4	890	7.5	2,415	14.0	6,465
1.0	290	3.6	951	8.0	2,645	14.5	6,855
1.2	330	3.8	1,013	8.5	2,895	15.0	7,250
1.4	370	4.0	1,075	9.0	3,160	16.0	8,060
1.6	413	4.2	1,141	9.5	3,435	17.0	8,880
1.8	459	4.4	1,207	10.0	3,710	18.0	9,710
2.0	505	4.6	1,274	10.5	4,000	19.0	10,540
2.2	555	4.8	1,342	11.0	4,305	20.0	11,370
2.4	605	5.0	1,410	11.5	4,630	----	-----
2.6	658	5.5	1,590	12.0	4,965	----	-----

ESTIMATED MONTHLY DISCHARGE OF NEUSE RIVER AT SELMA, N. C.  
[Drainage area, 1,175 square miles.]

Month.	Discharge in Second-feet.			Total in Acre-feet.	Run-off.	
	Maxi-mum.	Mini-mum.	Mean.		Depth in Inches.	Second-feet per Square Mile.
1896.						
August.....	1,480	170	443	27,239	0.44	0.38
September.....	1,337	125	213	12,674	0.20	0.18
October.....	2,080	140	315	19,369	0.31	0.27
November.....	1,260	185	321	19,101	0.30	0.27
December.....	2,920	340	874	53,741	0.85	0.74
1897.						
January.....	3,243	400	846	52,020	0.83	0.72
February.....	5,624	558	2,302	127,846	2.04	1.96
March.....	7,556	810	2,903	178,500	2.85	2.47
April.....	6,430	586	811	48,258	0.77	0.69
May.....	3,414	475	920	56,570	0.90	0.78
June.....	1,830	252	570	33,920	0.54	0.48
July.....	1,700	230	658	40,460	0.64	0.56
August.....	586	165	232	14,265	0.23	0.20
September.....	185	92	145	8,627	0.13	0.12
October.....	230	75	126	7,747	0.13	0.11
November.....	726	145	265	15,768	0.26	0.23
December.....	1,830	375	795	48,882	0.78	0.68
The year.....	7,856	75	881	632,863	10.10	0.75

ESTIMATED MONTHLY DISCHARGE OF NEUSE RIVER AT SELMA, N. C.—Continued.  
[Drainage area, 1,175 square miles.]

Month.	Discharge in Second-feet.			Total in Acre-feet.	Run-off.	
	Maxi- mum.	Mini- mum.	Mean.		Depth in Inches.	Second- feet per Square Mile.
1898.						
January.....	3,050	350	661	40,644	0.64	0.56
February.....	792	325	430	23,881	0.39	0.37
March.....	4,150	375	1,132	69,604	1.10	0.96
April.....	5,490	400	1,614	96,039	1.53	1.37
May.....	5,250	275	1,798	110,555	1.76	1.53
June.....	1,960	230	555	33,025	0.53	0.47
July.....	3,050	252	927	56,999	0.91	0.79
August.....	4,920	252	1,310	80,549	1.28	1.11
September.....	6,350	325	1,379	82,056	1.31	1.17
October.....	732	185	424	26,071	0.41	0.36
November.....	2,390	425	857	50,996	0.81	0.73
December.....	5,470	475	1,300	79,934	1.28	1.11
1899.						
January.....	3,200	356	1,107	68,067	1.08	0.94
February.....	12,050	1,625	6,754	375,098	5.98	5.74
March.....	9,890	1,425	5,396	331,792	5.28	4.58
April.....	8,570	495	2,078	123,650	1.96	1.76
May.....	1,760	440	948	53,290	0.93	0.81
June.....	3,625	335	868	51,650	0.91	0.73
July.....	3,850	295	948	53,290	0.93	0.81
August.....	4,100	265	843	51,834	0.83	0.72
September.....	712	185	289	17,197	0.28	0.25
October.....	4,100	195	721	44,333	0.68	0.61
November.....	4,540	235	964	57,362	0.91	0.82
December.....	980	295	436	26,809	0.43	0.37
1900.						
January.....	4,435	290	2,002	123,098	1.96	1.70
February.....	9,544	390	3,061	169,999	2.72	2.61
March.....	5,775	770	2,314	142,282	2.27	1.97
April.....	9,876	770	2,906	172,919	2.75	2.47
May.....	2,645	436	906	55,708	0.89	0.77
June.....	1,820	330	630	37,488	0.60	0.54
July.....	4,965	218	787	43,391	0.77	0.67
August.....	1,075	184	325	19,983	0.32	0.28
September.....	1,590	184	328	19,517	0.31	0.28
October.....	252	135	196	12,052	0.20	0.17
November.....	1,780	135	479	28,502	0.46	0.41
December.....	2,235	271	646	39,721	0.63	0.55

## CAPE FEAR RIVER DRAINAGE BASIN.

## DESCRIPTION OF BASIN.

Cape Fear River is formed by the junction, near Moncure, in Chatham County, N. C., of Haw and Deep rivers, which rise among the red clay hills of Guilford and Rockingham counties, N. C. Haw River is the more northerly of the two branches, and flows at first slightly toward the northeast, but turning soon to the southeast, drains the southern portion of Rockingham County and the greater part of Guilford, and passes thence through Alamance, a corner of Orange, and Chatham County to its junction with the Deep River in the lower part of Chatham. Deep River flows at first toward the south, but soon turns to the southeast and flows practically parallel with Haw River for many miles through Guilford and Randolph counties, and into Moore County, where it turns abruptly toward the east, flowing in this direction through Moore and Chatham counties to the junction with the Haw.

The area drained by the entire river system above the town of Fayetteville, N. C., the head of navigation on the river, is 4,493 square miles, of which Haw River drains 1,800, Deep River 1,400, and Cape Fear River below the junction 1,293 square miles.

The elevations of the divides between the drainage basin of the Cape Fear system and those of the adjacent streams are not very great, and the minor tributaries can not therefore furnish much power except in places where considerable storage may be obtained by the construction of suitable dams.

## MEASUREMENTS OF STREAM FLOW.

## CAPE FEAR RIVER NEAR FAYETTEVILLE, N. C.

This gaging station is at the bridge of the Atlantic Coast Line, about a mile east of Fayetteville, N. C. The Weather Bureau has a gage fastened on the lower side of the east abutment of the covered highway bridge, this being about 400 feet above the railroad bridge, from which discharge measurements are made. The lower 29 feet of this gage consists of a rod divided into feet and tenths and firmly fastened to the abutment. Above the 29-foot mark the scale is painted on the rock. The observer was Frank Glover, who has charge of the steamboat landing just below the railroad bridge. The channel is straight and the current moderately swift and not influenced by dams or other obstructions. The banks are high and the total flow of the river is in one channel, even during the highest floods. The bed is fairly constant. There is a difference in elevation of 50 feet between high and low water at this point. The station was abandoned May 31, 1903.

## DISCHARGE MEASUREMENTS OF CAPE FEAR RIVER AT FAYETTEVILLE, N. C.

Date.	Hydrographer.	Gage Height (Feet).	Discharge (Second-feet).
1895.			
Sept. 26	C. C. Babb	1.59	498
Dec. 7	do	2.90	1,109
1896.			
Apr. 5	E. W. Myers	19.30	10,525
Apr. 25	do	4.00	1,618
May 22	do	4.00	1,322
June 8	do	10.00	5,041
June 8	do	9.20	4,207
July 11	do	49.10	51,115
Sept. 2	do	1.10	519
Sept. 19	A. P. Davis	1.88	770
1897.			
Mar. 12	E. W. Myers	23.00	16,777
July 27	do	7.00	2,682
Sept. 30	do	.70	424
1898.			
Jan. 10	E. W. Myers	3.55	1,303
Aug. 22	do	28.35	23,215
1899.			
Feb. 7	E. W. Myers	46.50	61,921
May 24	do	6.40	3,142
June 6	do	4.20	1,577
Oct. 13	do	6.00	2,132
Nov. 29	do	9.65	7,742
1900.			
Feb. 9	E. W. Myers	6.90	3,748
Apr. 12	do	6.10	2,886
Apr. 25	do	25.30	13,479
May 17	do	3.80	1,596
June 29	do	5.80	2,331
Aug. 11	do	.70	415
Nov. 3	do	.75	416
1901.			
Apr. 5	E. Graves	47.00	46,519
July 15	E. W. Myers	40.30	38,300
Nov. 29	J. S. Henderson	4.50	1,783
1902.			
May 8	J. S. Henderson	4.50	2,111
July 12	B. S. Drane	2.50	1,120
Aug. 19	do	2.70	1,178
Sept. 5	do	.50	446
Oct. 16	do	5.13	2,487

DAILY GAGE HEIGHT, IN FEET, OF CAPE FEAR RIVER AT FAYETTEVILLE, N. C., FOR 1889-1890.

1889.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1	10.00	18.00	15.00	8.70	12.00	10.00	40.60	33.50	14.00	5.50	8.50	14.00
2	11.00	15.00	13.00	8.40	10.00	40.00	42.60	44.20	13.10	6.00	7.40	10.20
3	10.00	13.00	11.00	8.10	8.50	30.00	43.90	37.50	9.20	5.60	6.90	8.10
4	9.00	12.20	9.00	7.80	7.50	22.00	41.40	28.00	8.60	5.20	6.80	7.50
5	25.00	10.70	7.20	7.50	7.00	15.00	37.40	33.50	8.10	4.50	7.20	7.20
6	38.00	10.40	5.80	7.20	6.60	9.50	33.00	38.00	7.50	4.40	7.40	7.10
7	35.00	10.20	5.70	6.90	6.30	8.00	28.40	37.00	7.10	4.20	6.90	7.00
8	31.00	10.10	5.60	6.60	6.20	6.80	20.00	33.00	7.50	4.60	6.80	6.80
9	26.00	10.00	5.50	6.30	6.10	6.00	12.00	24.00	9.50	4.70	6.60	6.70
10	20.00	10.00	5.40	6.00	6.00	5.00	7.00	18.00	8.30	5.00	7.80	6.40
11	17.00	9.80	5.30	5.80	5.80	6.00	6.90	20.00	7.80	4.00	7.90	6.30
12	14.00	9.60	5.30	5.60	5.50	7.00	9.00	16.00	6.80	3.80	7.50	6.00
13	11.00	9.50	5.20	5.40	5.00	6.50	10.40	14.00	6.30	3.70	7.20	5.80
14	9.00	9.40	18.00	5.30	4.50	6.00	10.00	10.10	6.10	3.50	7.60	5.70
15	8.00	10.00	21.00	10.00	4.00	5.80	9.50	10.00	6.00	3.40	7.90	5.60
16	8.00	15.00	16.00	15.00	3.80	6.00	9.00	12.00	6.50	3.30	7.20	5.40
17	15.00	25.00	14.00	20.00	3.50	5.70	8.20	12.20	6.90	3.20	6.90	5.00
18	30.00	34.50	10.00	18.00	3.40	6.00	7.50	10.00	7.30	3.20	8.20	4.90
19	28.00	40.00	13.00	16.00	3.30	7.00	15.40	7.50	7.00	3.20	9.50	4.70
20	30.00	43.00	12.00	12.00	3.20	8.50	11.00	6.90	6.90	3.10	10.20	4.60
21	35.00	42.00	11.70	9.00	3.20	8.00	9.00	6.40	6.00	3.10	16.20	4.40
22	30.00	38.00	11.50	7.00	3.20	7.50	8.50	6.20	6.00	3.10	19.90	4.40
23	25.00	34.00	11.30	6.00	3.10	8.00	8.20	6.00	5.80	3.00	24.00	4.40
24	20.00	36.00	11.00	5.00	3.10	7.50	8.00	6.50	5.70	3.00	29.00	4.30
25	16.00	31.00	10.80	5.50	3.00	7.00	9.00	7.00	5.60	4.00	32.00	4.30
26	22.00	25.00	10.60	12.00	3.00	6.00	20.00	8.00	5.50	5.50	27.20	4.30
27	38.00	20.00	10.20	18.00	2.90	5.00	33.50	11.00	10.00	13.00	19.10	4.20
28	34.00	17.00	10.00	20.00	2.90	5.50	43.00	21.00	9.00	21.50	21.00	4.20
29	27.00		9.80	18.00	2.80	10.00	45.00	31.00	8.40	25.00	20.20	4.20
30	23.00		9.40	15.00	2.80	38.00	43.00	28.00	7.90	20.00	17.00	4.10
31	19.00		9.00		3.60		38.70	22.00		15.00		4.80
1890.												
1	7.20	4.60	22.00	7.70	6.00	6.40	2.90	1.10	16.50	8.00	7.80	5.80
2	7.50	4.80	23.10	7.60	5.80	6.00	2.80	1.60	13.40	7.60	7.60	5.90
3	7.40	5.00	20.00	7.80	5.70	5.50	3.10	4.20	10.20	7.00	7.40	6.40
4	7.00	5.70	17.40	8.00	7.60	4.00	4.50	5.10	7.10	6.50	7.00	5.10
5	6.50	5.90	16.20	7.80	9.40	3.60	6.20	4.90	5.20	6.20	8.40	4.90
6	6.20	6.20	11.40	7.70	12.00	3.10	5.70	4.80	4.80	6.00	9.20	4.70
7	5.80	7.50	9.30	7.60	14.60	2.90	5.00	5.60	4.60	5.80	9.00	4.60
8	5.70	8.20	9.10	7.50	12.00	3.90	4.70	10.20	4.50	5.60	8.40	4.80
9	5.40	10.00	9.00	7.40	10.10	6.70	3.90	14.40	4.20	5.20	8.00	5.20
10	5.00	14.80	8.80	7.30	9.20	10.00	2.80	18.10	4.00	4.00	7.80	6.70
11	4.90	12.20	8.60	7.20	8.90	11.00	2.60	22.00	5.90	3.90	7.70	6.40
12	4.80	11.00	8.20	7.80	8.70	9.90	2.30	24.50	6.20	3.80	7.50	6.00
13	4.70	10.20	7.40	8.20	8.50	8.60	1.90	20.10	6.00	3.50	8.40	5.80
14	4.60	10.00	7.20	8.30	8.20	7.40	1.60	15.20	7.10	4.00	8.90	5.60
15	4.50	9.20	8.40	8.00	7.90	6.80	1.40	10.60	14.80	3.80	8.70	5.10
16	4.30	10.40	12.20	7.80	7.80	6.40	1.20	8.40	27.90	3.70	8.50	5.00
17	4.20	11.20	14.10	8.40	7.60	6.20	2.20	8.20	30.20	4.80	8.40	4.90
18	4.00	10.10	12.20	10.20	7.50	6.80	2.50	9.40	21.40	5.90	8.00	6.20
19	4.00	9.00	10.10	12.00	7.00	6.70	2.50	13.50	16.20	13.40	7.80	10.10
20	4.20	8.20	8.90	14.50	6.70	6.60	2.90	17.60	11.00	15.00	7.40	20.20
21	4.20	7.80	10.20	12.40	6.00	6.40	2.70	21.40	8.00	11.20	7.00	18.00
22	4.20	7.50	12.10	10.20	5.70	6.00	2.60	20.10	6.10	8.90	6.50	14.10
23	4.10	8.60	14.40	9.10	4.00	5.50	5.20	17.20	5.20	8.00	6.10	12.20
24	4.20	11.00	16.50	8.80	3.70	5.10	7.10	15.10	4.90	10.20	5.70	10.10
25	4.20	12.00	23.20	8.50	3.50	4.80	10.20	18.40	4.80	12.40	5.00	9.80
26	4.10	14.20	20.00	8.20	5.40	4.70	9.10	18.00	5.20	22.50	4.70	12.40
27	4.10	19.00	16.40	7.90	9.20	4.10	8.20	13.20	6.80	18.10	4.50	19.20
28	4.20	20.00	12.10	7.40	12.40	3.80	12.40	10.40	7.20	12.40	4.20	14.10
29	4.20		10.20	6.80	9.80	3.40	15.10	10.10	8.10	10.20	5.10	12.00
30	4.20		8.10	6.20	7.20	3.00	18.20	8.40	8.40	8.40	5.20	10.20
31	4.20		7.80		6.80		20.00	10.20		8.00		9.40

## WATER-POWERS OF NORTH CAROLINA.

DAILY GAGE HEIGHT, IN FEET, OF CAPE FEAR RIVER AT FAYETTEVILLE, N. C., FOR 1891-1892.

1891.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	9.00	12.40	10.20	16.40	6.20	31.40	4.70	10.50	26.10	4.50	3.50	13.10
2.....	8.50	15.60	12.40	14.10	6.00	22.00	5.30	19.10	17.20	4.40	3.80	12.40
3.....	8.00	14.20	14.00	17.20	5.80	16.20	6.40	31.40	14.40	5.20	3.70	10.00
4.....	7.70	13.10	16.20	19.10	5.40	10.20	6.00	29.20	13.70	5.30	3.60	8.10
5.....	7.20	12.00	19.10	20.00	5.00	9.50	5.10	25.00	12.80	4.90	3.50	7.30
6.....	7.00	11.40	17.40	18.00	5.80	10.40	6.40	20.60	10.10	4.80	3.90	7.00
7.....	7.40	10.00	15.20	16.40	6.40	12.20	8.20	17.00	12.40	4.60	3.80	6.80
8.....	7.80	12.40	12.10	13.60	7.00	14.50	15.10	16.10	13.60	6.20	3.40	7.40
9.....	8.00	18.20	11.20	12.20	6.80	16.20	13.20	11.20	14.80	7.80	3.20	8.00
10.....	10.20	17.00	14.40	11.00	6.40	14.30	11.70	10.10	14.00	7.20	3.60	7.70
11.....	16.40	16.10	16.10	10.10	5.50	12.00	8.20	9.00	11.80	6.80	4.20	7.50
12.....	21.20	14.20	22.10	12.40	5.00	13.40	7.10	8.40	10.20	6.60	4.70	7.30
13.....	18.00	12.10	34.20	15.70	4.70	14.50	6.40	7.20	9.10	5.90	4.40	7.00
14.....	14.10	11.00	41.00	12.00	6.80	10.20	5.20	6.90	8.40	5.70	4.00	6.80
15.....	12.20	10.20	36.20	10.20	9.40	8.10	6.10	7.00	8.00	7.10	3.80	7.90
16.....	10.10	10.00	29.40	11.40	12.20	6.50	6.80	6.20	7.60	9.20	3.60	8.60
17.....	9.40	9.50	21.00	12.00	12.00	6.20	6.00	5.30	6.90	8.00	4.10	8.40
18.....	10.20	8.10	16.60	11.20	10.20	6.80	5.80	5.10	5.40	7.70	4.90	8.00
19.....	14.20	8.00	14.40	10.10	9.40	7.40	5.60	7.20	6.00	7.20	4.80	7.80
20.....	16.40	9.20	16.80	9.40	8.10	7.90	5.20	8.40	5.20	6.80	4.70	7.40
21.....	14.10	14.10	21.70	8.20	7.60	7.00	6.10	8.00	5.00	6.40	4.40	7.00
22.....	12.20	39.20	18.90	10.70	7.00	6.50	7.70	17.90	4.90	6.00	4.00	6.80
23.....	13.10	37.40	17.10	10.90	6.50	8.20	10.40	32.40	4.70	5.50	3.80	6.70
24.....	18.40	30.10	16.20	9.10	6.10	8.00	11.10	43.10	5.00	5.00	4.20	7.80
25.....	19.60	19.20	18.40	9.00	5.20	7.20	12.90	40.20	4.90	4.80	5.10	8.00
26.....	18.00	16.00	20.00	8.70	10.40	6.90	13.00	39.00	4.80	4.20	4.40	7.40
27.....	16.20	14.40	26.40	7.10	25.90	6.00	12.50	35.20	4.90	4.00	4.70	7.10
28.....	14.10	12.00	30.00	7.00	35.70	5.40	10.10	24.60	5.10	3.80	3.90	6.80
29.....	12.40	-----	25.80	6.80	40.20	4.10	8.90	30.10	4.80	3.70	6.20	6.00
30.....	10.60	-----	20.10	6.40	45.10	4.20	8.40	31.40	4.60	3.90	10.20	7.50
31.....	10.00	-----	18.20	-----	39.20	-----	9.60	32.20	-----	3.00	-----	8.10
1892.												
1.....	8.80	9.90	26.20	8.00	7.40	7.40	12.10	5.40	5.80	2.60	1.00	2.00
2.....	7.50	9.40	21.40	7.80	7.00	8.10	14.20	5.80	5.10	2.50	.90	1.80
3.....	7.00	9.00	18.10	9.40	6.80	8.40	11.60	5.50	4.20	2.30	.80	1.70
4.....	7.60	8.80	14.20	10.20	6.70	9.60	10.10	5.20	3.70	2.10	1.40	2.00
5.....	8.00	8.70	11.60	10.00	6.50	10.40	14.40	5.10	3.00	1.90	1.60	2.10
6.....	9.40	9.40	10.40	9.40	6.40	14.60	15.00	5.00	2.70	1.70	1.70	2.20
7.....	9.00	9.20	9.20	13.80	6.20	14.00	17.40	4.90	2.40	1.50	1.90	2.40
8.....	8.60	9.00	10.40	21.40	6.10	10.40	16.30	4.70	2.00	1.30	2.00	2.00
9.....	7.50	8.80	11.00	34.20	6.00	12.60	14.10	4.50	1.80	1.10	2.50	1.90
10.....	8.80	8.40	9.80	33.10	5.80	14.10	11.60	4.10	1.70	1.00	4.10	2.50
11.....	8.70	8.20	9.40	20.50	7.20	11.40	9.40	3.90	1.50	1.40	5.40	2.70
12.....	8.90	9.40	8.70	17.10	7.90	10.20	7.20	3.60	1.20	1.60	4.50	2.60
13.....	9.40	9.10	8.20	14.20	8.20	8.40	8.60	3.20	1.00	1.50	4.00	2.40
14.....	12.00	8.70	7.80	12.70	7.80	7.00	11.40	2.80	.90	1.40	3.70	2.30
15.....	13.60	8.40	7.00	12.00	7.60	6.60	12.70	2.40	2.50	1.30	3.40	2.10
16.....	18.50	7.90	6.80	15.20	7.00	6.00	13.10	1.90	5.50	1.20	3.80	2.20
17.....	22.00	7.70	8.20	13.60	7.40	5.80	17.20	1.60	3.60	1.10	7.50	2.70
18.....	30.20	7.50	10.10	12.00	7.90	4.90	14.10	1.40	2.40	1.00	8.00	3.00
19.....	29.10	7.20	9.60	10.80	7.40	5.10	10.40	1.20	1.80	1.10	7.30	3.30
20.....	37.80	8.40	9.20	11.10	6.80	7.20	7.70	1.00	1.60	1.20	6.80	9.60
21.....	49.50	8.80	8.70	10.40	7.60	9.40	6.90	.90	1.80	1.10	6.30	12.00
22.....	47.20	8.00	8.10	10.00	7.90	11.20	6.70	.80	4.90	1.00	5.00	14.40
23.....	36.40	7.60	7.80	17.20	10.80	12.60	7.00	1.70	7.40	.90	4.10	13.10
24.....	28.10	7.40	7.40	19.50	14.40	10.00	6.80	2.30	6.10	.80	3.50	10.70
25.....	22.30	7.00	8.60	14.10	12.00	9.40	7.20	3.80	5.30	.90	3.00	8.20
26.....	17.40	8.40	10.60	12.70	10.60	10.20	7.00	5.70	4.90	1.00	2.90	6.00
27.....	15.10	10.20	17.10	10.60	8.10	12.40	5.40	6.10	4.60	1.20	2.60	4.90
28.....	13.70	17.40	14.20	8.40	7.40	16.20	4.90	5.20	4.00	1.30	2.50	4.40
29.....	12.00	24.60	10.00	8.10	6.80	20.00	4.60	3.80	3.40	1.40	2.30	4.00
30.....	11.30	-----	9.10	7.80	6.20	18.70	4.40	4.90	2.70	1.20	2.10	3.90
31.....	10.20	-----	8.20	-----	6.00	-----	4.00	4.60	-----	1.10	-----	3.80

DAILY GAGE HEIGHT, IN FEET, OF CAPE FEAR RIVER AT FAYETTEVILLE, N. C., FOR 1893-1894.

1893.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	3.00	19.60	12.90	5.10	4.50	7.80	3.80	1.80	22.80	6.10	7.00	9.00
2.....	12.00	14.30	20.80	4.80	5.00	5.00	5.60	3.70	27.40	5.70	6.80	7.00
3.....	20.50	10.80	17.20	4.50	7.00	6.20	4.90	6.90	32.30	5.00	6.50	6.30
4.....	16.50	8.40	14.80	4.40	15.00	8.00	4.10	7.00	30.00	5.30	6.10	5.90
5.....	13.00	7.50	13.40	4.80	31.50	6.60	4.80	6.80	20.80	5.10	6.00	15.90
6.....	10.00	6.60	12.40	6.20	29.00	6.00	5.20	10.00	14.00	9.00	5.80	15.60
7.....	8.00	6.70	11.10	6.40	19.90	7.00	4.80	7.30	8.60	8.00	5.80	15.00
8.....	6.10	9.50	10.00	5.80	17.90	14.00	3.60	6.40	6.00	6.00	5.70	15.40
9.....	5.40	11.40	9.40	5.30	14.20	23.70	2.80	4.80	4.80	5.10	5.90	14.00
10.....	5.00	10.00	8.60	5.00	8.00	14.10	3.20	3.50	4.70	4.90	5.90	13.50
11.....	4.10	12.60	8.90	4.40	7.90	7.00	2.50	2.60	5.50	4.10	5.30	12.90
12.....	4.50	24.80	8.10	4.10	7.70	6.40	2.00	2.10	12.50	3.70	6.10	11.50
13.....	4.60	35.60	7.20	4.10	6.50	5.70	1.70	1.80	16.00	3.60	6.00	9.20
14.....	4.40	41.00	7.10	4.70	6.00	4.10	1.60	1.60	39.00	13.60	6.30	8.40
15.....	4.50	42.30	7.00	7.00	5.40	5.70	1.40	1.40	35.00	23.00	6.20	7.30
16.....	4.00	38.60	6.60	7.90	5.50	8.10	1.40	1.30	29.00	20.60	6.00	7.00
17.....	3.70	40.20	6.20	7.20	5.60	7.00	1.30	1.20	23.00	14.20	5.80	16.00
18.....	3.20	37.40	6.10	5.70	7.00	15.00	1.40	1.20	15.60	11.20	5.60	26.00
19.....	3.00	35.10	6.50	5.50	5.00	13.70	1.40	1.60	8.00	8.00	5.30	22.50
20.....	4.30	30.00	6.70	4.70	4.20	10.20	3.90	6.70	5.30	5.80	5.00	17.30
21.....	4.70	24.30	6.80	5.00	3.90	8.40	2.50	4.40	4.20	5.60	4.90	14.80
22.....	4.80	19.90	6.90	5.20	3.80	6.40	2.40	2.70	4.60	6.00	4.70	10.70
23.....	4.70	15.60	7.00	4.80	3.60	5.60	2.00	1.90	4.20	33.50	4.60	9.00
24.....	4.40	13.00	6.50	4.30	3.30	6.00	1.40	1.80	4.00	42.00	5.10	8.00
25.....	4.30	12.20	6.50	4.00	3.20	9.50	1.30	7.80	4.10	39.00	5.00	7.70
26.....	4.60	9.80	6.90	3.90	3.00	6.40	1.20	5.90	3.80	31.00	4.90	7.00
27.....	5.60	8.00	7.70	3.70	4.20	5.00	1.10	3.80	3.00	23.40	4.50	6.20
28.....	7.40	8.50	7.40	4.00	4.10	4.00	1.10	3.60	4.40	17.20	4.90	6.20
29.....	15.50		7.20	5.00	3.80	2.70	1.50	5.60	6.70	14.20	8.60	5.90
30.....	19.00		5.80	5.60	4.20	3.50	1.20	22.90	6.90	12.00	12.90	5.80
31.....	23.60		5.20		8.60		1.20	25.90		8.80		6.00
1894.												
1.....	8.00	15.90	25.00	5.70	3.40	7.20	2.10	6.00	5.00	14.30	12.60	4.30
2.....	9.30	11.60	28.20	5.40	3.40	5.30	2.10	7.00	4.30	12.90	12.00	4.30
3.....	7.30	10.60	26.50	5.00	3.30	4.00	5.00	5.50	3.90	9.40	10.00	4.40
4.....	7.00	9.70	22.00	4.90	3.30	3.60	7.70	14.00	3.40	7.20	14.20	4.10
5.....	6.00	12.80	18.00	5.00	3.20	3.10	7.60	25.40	4.20	6.60	20.00	4.40
6.....	6.10	15.00	16.10	5.80	3.40	2.60	5.80	31.20	4.60	11.30	15.90	5.10
7.....	6.40	12.00	12.80	4.80	10.60	2.50	4.50	34.40	4.00	9.70	11.50	5.40
8.....	23.00	10.90	10.00	4.60	9.80	2.30	3.90	29.60	3.80	7.00	8.70	5.50
9.....	27.00	8.60	8.30	4.40	7.50	2.00	3.80	24.70	3.60	6.00	7.00	5.60
10.....	23.50	12.00	8.30	4.10	5.40	2.10	3.10	19.00	3.40	20.00	6.20	5.70
11.....	25.60	10.20	8.30	4.20	4.80	2.00	2.60	12.20	3.10	47.40	6.50	5.80
12.....	23.50	8.60	8.00	8.30	4.40	2.00	2.50	9.00	2.60	47.90	6.20	10.20
13.....	19.50	8.20	7.80	8.60	3.30	1.90	2.00	7.60	2.30	38.80	6.20	17.20
14.....	17.00	8.00	7.30	7.00	3.20	1.60	1.80	8.80	1.90	29.00	6.30	18.40
15.....	15.40	13.60	7.30	6.20	3.60	1.60	1.60	8.10	1.90	22.30	6.50	12.00
16.....	14.40	27.40	7.00	5.00	3.40	1.50	1.60	8.40	1.80	16.60	7.10	10.40
17.....	12.00	28.00	6.90	4.70	4.20	1.20	1.80	10.40	1.50	12.40	6.20	8.00
18.....	11.60	23.80	6.30	4.30	4.00	1.10	2.10	10.30	1.40	8.60	6.90	7.20
19.....	11.00	18.60	8.60	4.20	4.50	1.00	3.30	9.00	4.60	7.20	6.40	6.50
20.....	10.00	16.00	9.70	4.00	6.80	1.30	2.90	7.80	12.00	5.80	5.90	6.00
21.....	8.20	15.00	8.50	5.60	10.00	2.90	2.70	8.60	8.90	6.20	5.90	5.90
22.....	7.30	12.40	7.00	5.80	8.00	3.00	2.30	6.70	7.00	5.80	6.00	5.30
23.....	7.00	11.00	6.90	5.80	6.40	2.70	4.30	5.60	5.20	5.60	5.70	5.50
24.....	6.50	11.00	6.30	5.30	7.20	2.80	8.00	5.00	4.20	5.50	5.40	5.10
25.....	7.00	11.20	6.00	5.00	8.40	2.80	14.20	4.70	3.30	5.40	5.40	5.00
26.....	7.00	12.00	6.90	4.20	8.20	2.20	11.00	3.60	2.90	5.30	5.60	4.90
27.....	6.80	14.40	8.60	4.00	7.00	1.80	7.70	5.30	4.00	5.50	5.20	4.90
28.....	6.60	20.00	8.00	3.70	4.90	1.80	4.60	9.40	11.60	10.50	5.00	8.50
29.....	7.00		7.00	3.70	4.80	1.70	3.90	11.00	17.00	15.60	4.90	11.60
30.....	11.40		6.50	3.50	4.30	1.70	3.30	7.00	15.50	13.20	4.60	8.90
31.....	17.00		6.00		4.60		4.50	5.90		10.40		7.00



## WATER-POWERS OF NORTH CAROLINA.

DAILY GAGE HEIGHT, IN FEET, OF CAPE FEAR RIVER AT FAYETTEVILLE, N. C., FOR 1895-1896.

1895.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	6.00	28.00	10.20	9.00	44.60	6.00	10.30	4.80	5.00	1.20	4.20	3.60
2.....	6.00	25.00	9.80	8.40	40.80	5.20	11.20	4.80	4.30	1.10	5.00	3.10
3.....	6.00	28.00	12.00	10.90	33.60	4.10	15.50	4.10	4.40	1.00	6.00	3.20
4.....	6.40	27.80	24.80	11.00	27.00	4.00	14.00	3.80	4.40	1.00	7.00	3.00
5.....	7.80	23.40	25.20	11.00	22.00	4.00	11.50	3.60	4.00	.70	6.00	3.00
6.....	7.40	18.90	19.20	9.40	17.90	4.20	8.00	3.40	3.70	.90	4.80	3.00
7.....	6.10	15.20	17.00	9.00	14.20	4.00	6.50	3.10	3.40	1.10	4.10	2.90
8.....	5.90	14.00	15.40	11.50	17.20	4.50	5.40	3.70	3.20	1.30	3.60	2.80
9.....	8.00	11.80	23.60	42.00	18.00	4.40	5.00	3.90	3.20	1.60	3.20	2.60
10.....	37.00	11.00	20.00	47.70	14.80	4.30	5.10	4.70	4.70	1.90	3.10	3.90
11.....	52.00	10.00	18.70	46.40	11.60	4.10	5.00	4.40	5.00	1.70	3.70	10.60
12.....	58.00	9.80	17.80	35.00	12.40	5.30	4.90	4.00	4.70	1.60	7.00	13.20
13.....	56.40	9.40	20.60	25.20	11.20	7.00	5.40	4.30	4.50	2.00	8.90	10.00
14.....	47.40	9.00	23.00	18.50	10.90	9.40	5.40	8.00	3.90	2.00	6.60	8.20
15.....	38.00	8.80	30.40	14.20	9.00	8.40	4.40	7.00	3.10	1.80	5.40	6.20
16.....	25.50	9.20	26.50	11.50	8.50	10.20	5.50	7.20	2.80	1.60	4.40	5.20
17.....	17.80	10.50	24.00	12.40	8.40	11.00	5.70	12.90	2.80	1.50	4.00	4.70
18.....	14.80	11.60	20.20	29.20	8.00	12.20	5.80	20.00	2.60	1.30	3.80	4.30
19.....	12.00	14.00	18.00	36.70	11.80	8.90	7.00	20.20	2.40	1.50	3.50	4.10
20.....	11.00	16.20	14.80	32.50	10.40	5.80	5.20	15.30	2.10	1.50	3.20	4.20
21.....	10.40	16.40	31.00	26.50	12.00	4.80	4.50	11.50	2.10	1.20	3.10	4.00
22.....	9.90	18.40	41.00	18.00	8.40	4.20	4.20	8.90	2.00	1.30	3.10	4.00
23.....	11.00	18.90	37.10	14.00	7.80	5.20	4.90	8.00	1.70	1.40	3.00	18.50
24.....	10.40	19.00	30.10	12.90	7.20	5.60	5.00	8.30	1.70	1.30	2.90	13.40
25.....	9.70	16.40	23.40	12.20	8.00	4.50	5.70	6.80	1.60	1.30	2.80	9.20
26.....	11.00	15.20	18.20	10.20	8.70	4.50	15.60	5.70	1.60	1.10	2.80	7.00
27.....	29.00	12.00	15.00	12.00	10.80	7.20	21.00	4.80	1.40	1.30	3.00	5.80
28.....	24.20	11.20	12.80	18.50	10.20	9.10	15.50	5.60	1.30	1.20	4.50	5.00
29.....	20.20	-----	10.20	28.00	9.50	10.20	10.00	7.00	1.30	1.40	4.00	4.90
30.....	24.00	-----	9.90	39.30	8.00	9.20	6.20	6.40	1.30	1.30	4.00	4.80
31.....	26.40	-----	9.40	-----	7.10	-----	5.10	6.10	-----	1.60	-----	6.00
1896.												
1.....	18.00	6.50	9.00	7.50	3.70	4.00	7.00	3.30	1.30	31.00	2.50	6.00
2.....	18.90	6.50	10.40	9.50	5.00	3.20	5.30	4.30	1.10	26.80	2.70	15.40
3.....	11.40	7.90	9.30	22.50	8.00	2.70	4.00	4.00	1.00	19.50	2.70	14.00
4.....	8.00	27.70	7.60	19.40	12.80	4.00	3.50	3.30	.80	12.90	3.00	12.40
5.....	6.50	31.00	6.50	13.00	10.40	19.00	3.50	3.00	1.50	7.80	4.30	10.40
6.....	5.70	30.00	6.00	9.80	8.30	20.00	5.90	3.00	3.00	4.90	17.00	9.50
7.....	4.60	45.40	5.80	8.00	6.00	14.00	4.40	2.60	8.60	4.20	19.00	9.60
8.....	4.40	48.00	5.80	6.80	4.50	10.00	15.00	2.60	9.50	3.60	14.30	13.50
9.....	4.60	45.00	5.40	6.00	4.40	8.00	34.80	2.30	5.50	3.20	10.40	14.50
10.....	4.60	42.40	5.40	5.40	3.90	6.20	47.50	2.00	4.00	3.00	7.70	13.60
11.....	4.70	36.00	5.50	5.20	3.50	6.00	49.50	2.00	3.30	2.70	6.00	11.70
12.....	4.40	30.40	7.80	5.50	3.20	6.00	47.00	1.90	2.60	2.70	4.80	9.50
13.....	4.20	19.00	11.00	5.50	2.80	5.00	41.00	2.70	2.00	2.70	4.60	8.20
14.....	4.00	16.20	10.00	5.00	2.80	7.00	30.30	4.00	1.60	3.00	4.50	7.00
15.....	4.10	17.40	8.60	4.90	2.60	10.90	19.00	3.40	1.40	3.30	4.50	7.50
16.....	4.00	10.00	7.20	5.00	2.50	8.50	14.40	3.70	1.20	3.20	4.80	9.40
17.....	5.00	13.40	7.50	4.90	2.50	5.70	9.50	3.70	1.00	3.00	4.20	14.00
18.....	19.00	11.60	8.00	4.70	2.10	4.60	9.30	3.00	1.50	2.90	4.00	12.30
19.....	26.00	10.50	7.80	4.50	2.40	6.00	9.00	2.60	1.90	2.60	4.00	9.00
20.....	21.40	10.60	8.50	4.20	2.30	5.30	8.70	2.50	3.00	2.40	3.80	9.00
21.....	15.00	9.80	10.50	4.00	3.50	6.40	8.90	2.50	2.50	2.10	3.60	8.20
22.....	12.20	9.00	9.60	3.80	4.10	5.00	8.30	2.10	1.60	2.20	3.50	7.00
23.....	10.00	8.00	7.80	3.60	8.17	4.30	7.90	2.70	6.00	2.30	3.20	6.90
24.....	25.00	7.80	6.80	3.50	11.40	4.50	7.20	2.00	6.80	2.70	3.10	6.30
25.....	25.60	7.80	6.50	4.00	17.40	6.40	7.50	2.40	5.00	4.40	3.00	5.40
26.....	21.00	7.70	6.00	4.60	12.00	7.80	7.00	4.00	3.90	4.10	3.00	4.60
27.....	16.20	7.40	7.00	7.00	9.50	8.60	5.20	3.70	3.20	3.50	3.00	5.00
28.....	12.00	7.30	6.30	5.50	8.00	6.00	4.30	2.70	2.90	3.00	3.30	4.90
29.....	9.40	7.90	6.20	4.90	7.20	10.80	3.70	2.00	3.50	2.80	3.20	4.80
30.....	8.10	-----	5.80	4.10	6.00	8.90	3.60	1.90	8.00	2.50	3.50	4.90
31.....	7.00	-----	5.30	-----	5.00	-----	3.40	1.40	-----	2.50	-----	5.00

DAILY GAGE HEIGHT, IN FEET, OF CAPE FEAR RIVER AT FAYETTEVILLE, N. C., FOR 1897-1898.

1897.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	6.20	5.50	13.40	7.70	6.10	7.00	5.00	4.70	2.20	0.70	1.90	5.50
2.....	6.00	5.90	11.70	8.00	10.00	8.60	3.20	3.20	4.60	.70	5.50	6.00
3.....	5.50	25.00	10.20	7.30	14.40	6.50	2.50	3.00	3.50	.80	9.70	5.10
4.....	5.50	27.00	9.00	8.00	13.20	5.00	2.00	2.70	3.00	.60	9.30	4.60
5.....	5.30	19.70	8.50	9.30	9.30	4.20	1.90	2.20	2.50	.70	7.20	4.30
6.....	5.00	15.00	7.60	27.00	8.00	4.30	3.90	2.60	2.10	.50	5.00	5.10
7.....	4.80	29.10	9.20	28.30	6.30	7.00	4.20	4.10	1.80	.30	4.00	5.20
8.....	4.60	36.50	25.60	22.00	5.60	5.50	4.80	6.80	1.50	.20	3.50	4.70
9.....	4.60	32.00	26.20	15.40	5.00	7.00	4.20	6.20	1.10	.20	2.90	4.10
10.....	4.40	24.30	20.00	23.50	4.60	7.80	4.00	6.20	1.10	.30	2.60	3.70
11.....	4.20	17.60	21.40	28.00	4.20	5.50	4.00	5.40	1.10	.60	2.40	3.40
12.....	4.10	13.00	22.00	22.70	5.20	4.40	3.90	4.30	1.10	.60	2.50	3.30
13.....	4.00	18.20	29.70	18.30	6.00	4.20	6.00	3.50	.90	.60	2.40	3.30
14.....	4.50	19.00	32.00	14.30	10.00	3.50	11.10	3.00	.80	.60	2.30	3.00
15.....	6.00	16.30	36.40	12.80	17.40	3.20	6.00	2.40	.70	.40	2.00	3.00
16.....	6.40	12.80	37.60	10.20	14.00	3.00	4.60	3.80	.60	.30	2.00	4.00
17.....	7.80	13.20	37.60	10.00	10.30	2.70	3.20	3.00	.30	.30	1.80	4.90
18.....	7.00	15.00	29.00	9.80	8.30	3.00	3.20	2.50	.80	.30	1.60	5.20
19.....	8.50	12.90	23.80	8.40	6.70	3.50	3.80	2.20	.80	.30	1.90	4.50
20.....	9.60	10.80	19.20	7.70	5.50	4.50	5.50	3.00	.90	.40	1.90	3.90
21.....	7.80	14.00	18.00	7.00	4.80	4.30	16.50	3.20	1.40	.90	1.70	3.50
22.....	20.40	24.30	16.60	6.70	4.50	3.50	25.30	5.00	1.40	1.50	1.70	3.50
23.....	24.55	23.50	13.70	6.30	4.30	3.00	16.40	5.20	1.10	1.60	1.70	4.80
24.....	16.80	23.50	11.20	5.80	4.20	2.40	12.70	6.50	1.10	1.70	1.50	9.00
25.....	12.60	24.20	10.00	5.50	4.30	1.80	8.50	5.60	1.10	2.00	1.40	7.80
26.....	8.50	23.30	9.30	5.50	4.60	4.80	6.10	4.90	1.10	2.20	1.60	5.70
27.....	7.20	20.40	8.40	5.20	4.50	3.40	7.00	4.00	.90	1.90	1.70	6.00
28.....	7.00	16.60	8.00	4.70	4.40	2.80	7.30	3.50	1.10	1.90	1.90	10.00
29.....	6.60	-----	7.40	4.50	4.00	3.70	6.90	2.90	.80	1.70	2.30	9.50
30.....	5.90	-----	7.20	4.40	4.40	4.00	5.60	2.50	.70	1.90	3.50	7.10
31.....	5.60	-----	7.20	-----	4.30	-----	5.00	2.50	-----	1.70	-----	5.00
1898.												
1.....	5.00	5.00	3.50	21.00	6.60	3.20	2.00	6.00	10.30	2.90	14.00	6.10
2.....	4.90	4.90	3.20	17.30	5.50	3.00	2.00	7.00	9.60	2.50	9.30	6.90
3.....	4.50	4.80	3.50	11.00	5.00	3.00	1.50	7.00	7.20	2.40	7.10	6.70
4.....	4.30	4.40	3.50	9.40	4.30	2.70	1.20	6.40	5.70	2.50	5.50	8.40
5.....	3.70	4.00	7.00	6.00	3.10	2.30	1.00	5.20	14.00	2.40	4.70	16.00
6.....	3.70	3.90	20.50	12.80	3.80	1.90	5.10	5.00	18.80	2.50	4.20	18.00
7.....	3.60	3.80	17.70	21.50	3.10	1.40	12.00	4.10	14.00	5.50	3.80	14.60
8.....	4.00	3.60	11.00	15.30	8.00	1.20	16.20	3.00	12.50	5.60	5.40	11.50
9.....	3.60	3.50	8.70	11.70	7.00	1.10	12.40	3.00	13.20	4.20	5.00	9.00
10.....	3.50	3.40	7.90	8.00	6.30	1.20	10.20	2.60	10.00	3.40	4.80	7.00
11.....	3.40	3.40	5.80	7.00	5.40	1.10	12.50	2.30	8.70	2.70	4.30	5.50
12.....	3.30	3.50	5.20	6.10	4.50	1.10	8.00	3.70	6.50	2.30	3.70	5.30
13.....	3.40	3.50	4.90	5.90	4.00	1.20	6.00	5.00	5.00	2.00	3.50	5.30
14.....	3.60	3.40	5.00	5.70	3.70	1.30	5.10	9.40	4.20	1.90	3.90	5.30
15.....	3.80	3.20	5.10	5.40	5.00	1.30	5.10	16.00	4.10	1.80	4.30	5.00
16.....	3.60	2.90	8.00	5.40	4.90	2.50	5.50	14.00	3.80	1.80	6.00	5.00
17.....	3.70	2.90	9.20	5.60	5.10	3.90	5.50	10.00	3.60	1.50	7.00	4.80
18.....	3.60	2.90	7.70	5.40	4.70	4.30	4.10	7.00	3.40	1.30	9.80	4.60
19.....	3.70	3.10	6.20	4.70	4.20	3.90	6.00	9.20	3.10	2.00	10.20	4.70
20.....	3.80	4.50	5.50	4.40	4.00	4.00	5.50	22.20	2.90	5.00	11.00	4.60
21.....	3.60	5.30	5.00	4.20	3.50	7.00	5.50	29.00	2.50	5.00	12.20	5.30
22.....	4.10	5.70	5.00	4.00	3.00	7.00	4.20	29.20	2.20	4.50	9.60	6.10
23.....	4.40	6.00	4.70	3.90	3.00	5.50	3.60	23.50	2.50	10.00	7.80	8.00
24.....	4.40	5.50	4.50	4.10	2.90	4.30	10.00	18.00	15.00	9.80	5.60	7.30
25.....	4.40	5.10	4.20	4.40	12.00	3.20	7.00	10.30	14.00	6.00	5.10	7.00
26.....	5.50	4.50	5.00	7.20	11.40	2.70	6.00	6.00	9.80	4.50	5.00	6.40
27.....	14.00	4.10	6.00	10.40	9.00	2.20	4.60	6.10	7.00	4.70	5.10	5.50
28.....	11.00	3.80	5.60	10.70	6.70	1.70	4.10	6.20	5.00	4.50	4.70	5.30
29.....	9.20	-----	4.70	12.00	5.00	1.60	4.00	7.00	3.90	3.60	4.40	5.10
30.....	6.50	-----	4.30	9.60	4.00	2.10	3.90	8.50	3.40	3.50	4.70	4.90
31.....	5.30	-----	14.80	-----	3.50	-----	4.00	11.00	-----	10.00	-----	4.70

## DAILY GAGE HEIGHT, IN FEET, OF CAPE FEAR RIVER AT FAYETTEVILLE, N. C., FOR 1899-1900.

1899.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	4.50	11.00	30.80	17.80	7.20	6.00	2.90	11.50	2.40	2.00	11.00	8.00
2.....	4.00	18.10	25.00	17.00	6.00	6.40	6.40	10.00	2.20	1.70	21.40	6.40
3.....	6.50	14.00	21.00	14.00	6.00	8.00	8.00	8.80	1.90	1.70	17.50	6.50
4.....	6.50	12.80	28.60	12.20	5.50	7.60	7.60	7.00	1.60	1.50	12.80	7.00
5.....	5.80	23.00	34.40	15.60	5.50	6.10	6.10	5.50	1.50	1.40	10.40	6.70
6.....	5.50	31.90	33.20	21.00	5.50	4.20	4.20	4.20	1.60	2.10	8.30	5.50
7.....	5.50	41.00	27.40	17.60	5.50	4.20	4.20	3.20	1.40	14.40	6.50	5.10
8.....	17.00	50.80	25.00	23.20	8.60	3.80	3.80	2.60	2.00	13.50	5.00	4.90
9.....	21.40	52.00	20.00	35.50	14.20	3.50	8.30	7.00	1.80	17.00	5.00	4.70
10.....	14.90	47.30	15.00	30.30	13.00	4.50	9.30	10.20	1.90	13.20	5.00	4.30
11.....	10.20	37.40	11.50	23.00	9.80	7.50	6.40	7.00	1.80	10.00	4.80	4.30
12.....	8.00	30.00	10.20	19.40	10.90	8.10	5.00	5.50	5.70	7.00	4.50	4.50
13.....	9.30	20.80	9.40	15.80	11.00	10.00	3.60	4.60	4.00	5.00	4.60	4.00
14.....	10.00	12.30	8.70	13.50	15.40	11.10	3.10	3.70	4.00	4.50	4.30	14.00
15.....	19.00	10.00	18.60	10.20	17.30	8.00	2.60	3.00	4.60	3.80	4.00	10.00
16.....	23.60	12.50	38.60	9.80	12.00	5.80	2.40	2.70	4.00	3.50	4.00	7.50
17.....	17.20	24.00	42.00	9.00	9.70	5.00	2.40	2.50	2.50	3.50	4.00	6.00
18.....	14.50	30.50	38.00	10.00	7.20	4.60	4.50	2.40	1.80	3.00	3.90	5.40
19.....	13.40	42.60	28.00	9.20	5.50	4.10	4.00	2.70	1.60	3.30	3.80	5.00
20.....	11.00	43.00	28.80	9.40	5.30	3.70	3.50	2.70	1.80	3.00	3.60	4.80
21.....	9.20	38.50	32.00	9.00	5.20	3.20	3.00	2.30	2.50	2.70	3.50	4.50
22.....	8.00	34.00	25.00	8.50	5.00	3.20	2.40	2.20	4.00	2.50	3.30	4.00
23.....	7.00	28.30	18.00	8.40	5.30	3.00	2.30	5.00	3.70	2.20	3.30	4.20
24.....	6.20	23.00	14.70	8.00	6.30	3.10	2.80	3.70	3.20	2.30	3.80	5.40
25.....	6.20	18.20	12.00	6.60	6.00	2.90	4.00	2.50	2.60	2.10	4.00	10.00
26.....	6.00	16.40	10.00	7.00	5.50	2.50	6.40	2.70	2.90	2.10	4.00	12.00
27.....	7.00	17.00	10.00	10.00	5.30	2.80	7.00	2.10	3.70	2.10	4.50	9.70
28.....	6.80	28.40	12.00	11.40	4.70	3.10	12.80	1.60	3.90	2.10	5.60	7.30
29.....	6.60	-----	17.80	10.00	4.20	3.50	11.70	1.60	3.00	2.10	10.00	6.00
30.....	6.60	-----	21.70	8.80	4.20	3.20	9.90	1.50	2.50	2.10	9.50	5.90
31.....	7.00	-----	19.20	-----	5.00	-----	7.60	2.90	-----	4.20	-----	-----
1900.												
1.....	5.00	5.20	12.00	9.00	8.30	3.20	5.00	2.60	5.00	0.90	0.60	2.80
2.....	4.90	5.00	27.00	7.70	9.70	3.20	4.30	2.80	4.50	.80	.80	2.20
3.....	4.30	4.60	33.70	6.90	7.30	3.00	4.00	2.20	3.80	.70	.70	2.10
4.....	4.40	4.40	29.00	6.70	6.90	2.80	3.50	1.80	2.50	.60	2.50	2.30
5.....	4.20	5.30	22.30	9.10	6.40	2.80	3.10	1.80	1.80	.90	12.50	14.00
6.....	4.40	7.50	15.00	10.00	5.60	2.70	3.60	1.40	1.20	1.20	10.50	15.00
7.....	4.20	10.00	11.70	9.20	5.30	2.70	3.10	1.40	.80	1.00	7.00	9.20
8.....	4.10	8.00	9.70	6.70	5.00	2.60	3.10	1.20	.70	.80	5.20	8.40
9.....	3.90	6.40	10.00	6.00	5.00	3.50	2.60	.90	.60	.70	4.00	6.50
10.....	3.90	7.00	23.00	5.80	4.90	3.90	2.20	.80	.40	.70	3.40	4.80
11.....	4.80	10.00	19.00	5.80	5.50	4.20	1.80	.70	.60	.90	2.90	4.00
12.....	9.00	20.80	17.20	5.60	5.50	4.20	1.60	.70	.50	.80	2.50	3.50
13.....	21.30	25.70	14.30	18.00	5.00	3.00	1.40	.70	.30	1.80	2.40	3.40
14.....	21.00	36.00	10.40	18.00	4.70	2.60	1.80	.70	.40	1.60	2.00	3.30
15.....	17.30	35.80	8.70	14.40	4.00	2.50	5.00	.80	.50	1.30	1.90	3.30
16.....	12.00	30.00	9.80	10.20	3.80	3.00	3.00	.60	2.10	1.40	2.00	3.40
17.....	9.10	24.70	19.00	7.00	3.80	2.70	2.50	.50	10.40	2.90	1.80	3.10
18.....	7.50	18.40	19.00	6.00	3.60	5.50	2.00	4.50	8.40	2.70	1.50	3.00
19.....	6.50	13.70	15.00	6.00	8.00	14.00	1.70	3.90	4.60	1.90	1.30	3.00
20.....	7.70	9.00	12.40	38.00	18.00	8.00	1.50	2.80	3.20	1.60	1.10	2.60
21.....	12.50	8.20	10.00	44.00	14.00	5.70	1.30	2.40	2.10	1.20	1.00	4.00
22.....	14.00	9.10	9.40	44.00	10.40	4.40	1.10	1.70	1.70	1.00	1.10	12.80
23.....	11.70	23.00	8.50	38.00	7.00	4.00	1.00	1.60	1.40	.90	1.10	16.00
24.....	8.00	23.00	7.60	33.00	5.40	12.00	.90	3.50	1.30	.50	1.10	11.40
25.....	7.10	17.50	7.00	26.00	5.70	17.40	3.50	2.20	1.00	.80	1.10	9.80
26.....	6.50	21.00	9.80	22.00	5.50	16.00	3.80	2.30	.90	.70	1.50	7.00
27.....	6.10	19.00	14.00	17.00	5.50	13.70	4.50	1.70	.80	.70	1.50	5.60
28.....	5.60	14.10	14.00	12.20	5.00	8.00	12.00	1.20	1.30	.80	2.50	4.40
29.....	5.70	-----	11.60	10.00	4.50	5.50	9.00	.90	1.00	.60	3.20	4.00
30.....	5.50	-----	9.80	8.30	4.00	5.00	5.80	.90	1.10	.70	3.10	4.40
31.....	5.30	-----	9.60	-----	3.70	-----	4.60	1.10	-----	.70	-----	6.20

## CAPE FEAR RIVER DRAINAGE BASIN.

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DAILY GAGE HEIGHT, IN FEET, OF CAPE FEAR RIVER AT FAYETTEVILLE, N. C., FOR 1901-1902.

1901.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1	12.00	6.40	4.20	12.80	5.20	13.30	9.20	4.70	11.00	10.40	3.60	3.80
2	11.40	6.40	4.00	9.60	4.80	10.00	10.00	4.90	13.60	9.30	3.80	3.70
3	10.00	5.50	3.90	14.40	4.50	9.00	9.50	4.20	12.40	10.00	3.80	3.60
4	8.20	5.60	3.70	45.90	4.50	7.80	7.00	4.00	9.80	9.40	3.60	4.00
5	6.00	9.00	3.70	47.70	4.30	6.30	5.50	3.60	7.60	8.50	3.60	4.00
6	5.70	11.00	3.70	41.70	4.00	6.30	4.60	6.00	6.50	7.50	3.60	3.80
7	5.20	8.20	3.30	30.80	3.90	6.00	3.80	29.40	5.80	6.30	3.70	4.10
8	4.60	6.40	3.10	23.80	4.00	5.90	4.10	43.60	5.50	5.90	3.70	4.00
9	4.00	6.00	3.10	16.60	5.00	5.60	6.00	44.80	5.30	5.30	3.70	3.80
10	4.20	10.00	3.00	10.00	5.50	5.40	10.20	38.00	5.00	5.20	3.70	3.90
11	4.50	11.20	3.50	7.00	7.70	5.00	10.00	30.70	4.70	5.20	3.50	3.80
12	4.80	9.30	4.30	6.60	10.50	4.80	8.70	19.80	4.70	5.00	3.50	4.00
13	12.90	10.00	5.30	6.00	10.00	4.40	7.00	11.00	4.40	4.80	3.50	3.90
14	15.40	9.50	5.00	7.00	8.30	6.30	8.00	28.80	4.30	5.00	3.00	4.00
15	11.00	7.40	4.50	20.40	7.00	9.40	30.10	42.00	4.10	9.00	3.60	5.00
16	8.40	6.60	4.00	20.80	5.80	9.00	41.50	40.00	4.00	8.00	3.60	15.40
17	6.70	5.40	3.70	16.00	4.70	14.40	36.50	32.00	7.80	6.20	3.60	16.20
18	9.00	5.00	3.40	11.80	4.40	22.30	29.70	30.00	14.00	5.50	3.50	11.00
19	12.20	5.00	3.20	9.30	5.00	23.00	25.30	26.50	37.50	5.00	3.60	9.20
20	10.00	4.80	3.10	7.50	6.60	15.70	31.10	26.00	43.60	4.50	3.50	7.00
21	8.50	4.50	4.00	8.30	10.00	11.40	33.00	23.80	40.00	4.40	3.50	5.20
22	6.00	4.40	4.50	13.20	14.00	9.00	25.80	20.40	29.00	4.10	3.50	4.60
23	5.20	4.00	4.00	14.00	48.00	13.40	18.20	15.60	21.80	3.80	3.50	4.20
24	4.60	4.00	3.90	12.00	58.50	10.80	12.00	13.40	15.00	4.00	3.70	4.60
25	5.30	4.10	3.80	14.00	54.70	9.00	10.30	20.00	10.40	3.90	6.00	5.60
26	5.30	4.00	5.50	12.00	42.00	8.70	9.00	23.00	8.30	3.80	6.10	7.00
27	5.40	4.00	28.30	9.60	33.90	7.80	6.80	17.80	7.20	4.00	5.00	7.30
28	5.20	3.90	36.00	8.00	27.50	9.20	5.60	15.60	7.30	3.80	4.70	12.00
29	4.60		32.00	7.00	27.20	16.60	5.40	16.40	9.00	3.60	4.50	16.00
30	4.60		25.80	6.10	23.00	11.20	5.00	16.00	10.00	3.60	3.80	25.20
31	5.00		19.70		18.00		4.60	12.50		3.50		35.50
1902.												
1	35.50	17.00	40.50	16.80	7.00	3.10	4.40	2.70	1.00	3.90	2.60	7.60
2	30.00	27.70	41.70	12.60	7.00	2.90	3.30	2.30	.90	4.40	2.30	20.00
3	22.00	39.80	39.80	10.20	5.80	2.80	2.70	2.30	.90	5.80	2.00	19.20
4	16.60	40.30	33.50	8.00	5.80	2.60	2.40	1.80	.50	4.60	1.90	21.60
5	12.50	35.80	29.30	7.30	5.40	2.50	2.10	1.60	.50	4.00	1.70	19.40
6	9.00	26.20	23.00	10.00	5.00	2.40	1.80	1.40	.80	3.60	1.70	17.80
7	8.00	19.00	19.90	8.80	4.50	2.30	1.60	1.80	.80	5.70	2.30	14.00
8	7.00	14.20	16.80	7.60	4.50	2.10	1.40	2.10	.80	6.00	2.80	11.20
9	6.90	11.00	13.60	8.00	4.50	2.20	1.20	2.10	1.00	5.00	3.20	9.70
10	6.90	9.50	12.90	8.00	4.80	2.40	3.30	1.80	1.10	3.80	3.60	7.00
11	6.80	8.00	12.00	8.50	4.80	2.20	2.80	1.80	1.40	3.30	3.00	6.00
12	6.50	7.90	11.00	11.00	4.50	2.40	2.30	3.00	5.80	3.80	2.50	5.60
13	6.20	7.80	10.20	11.00	4.40	2.50	2.70	3.40	3.80	7.00	2.40	6.00
14	5.80	7.70	9.20	9.60	5.20	2.20	3.50	2.40	3.60	8.00	2.20	16.00
15	5.70	7.50	8.80	8.00	5.00	1.90	2.80	1.60	2.20	6.10	2.10	15.60
16	5.30	6.50	8.70	7.30	6.00	1.90	2.60	1.70	1.50	5.60	1.80	11.20
17	5.30	7.90	11.00	6.80	6.00	2.40	2.30	2.80	1.40	4.70	1.90	9.20
18	5.30	9.00	20.00	6.00	5.40	8.00	2.30	2.80	1.00	3.80	1.90	9.50
19	5.30	9.80	17.80	5.80	6.20	7.80	2.10	2.70	.90	3.00	2.00	10.00
20	5.30	10.00	14.00	11.00	6.50	6.00	1.60	2.40	.90	3.00	6.50	8.40
21	5.20	10.80	11.00	9.60	6.80	5.00	1.30	2.70	.80	2.90	6.60	7.80
22	11.50	12.20	9.80	8.00	5.80	3.70	1.50	2.50	.70	2.50	5.20	7.80
23	19.80	18.50	9.00	7.30	4.40	3.00	1.30	2.20	.80	1.90	4.00	14.80
24	17.20	24.50	8.50	6.80	3.90	2.70	1.00	2.20	.70	2.00	3.50	14.00
25	12.80	26.90	8.30	6.00	3.60	2.70	1.00	2.20	.50	2.00	3.00	9.80
26	10.00	35.30	8.00	5.80	3.80	3.40	1.70	2.10	2.00	1.70	3.70	8.60
27	8.00	38.30	7.70	5.70	4.80	4.40	1.60	1.70	4.60	1.60	7.00	7.00
28	7.50	35.00	7.20	5.40	5.00	4.40	1.10	1.40	8.00	1.70	10.00	6.20
29	8.20		7.80	5.10	4.80	4.70	1.50	1.30	8.00	1.90	8.00	5.80
30	10.00		15.60	6.00	4.00	5.30	1.90	1.30	6.20	1.80	5.00	5.30
31	12.20		20.00		3.60		1.80	1.20		2.80		5.80

DAILY GAGE HEIGHT, IN FEET, OF CAPE FEAR RIVER NEAR FAYETTEVILLE, N. C., FOR 1903.

Day.	Jan.	Feb.	Mar.	Apr.	May.	Day.	Jan.	Feb.	Mar.	Apr.	May.
1.....	5.80	7.60	26.20	38.80	14.70	17.....	6.50	18.00	10.00	21.90	4.70
2.....	5.60	7.00	29.30	33.20	10.80	18.....	6.40	33.50	9.40	17.80	4.50
3.....	8.50	6.80	26.20	25.20	9.20	19.....	6.10	33.00	8.70	13.20	4.20
4.....	24.00	6.60	19.40	18.00	8.00	20.....	5.70	26.80	7.80	10.80	4.00
5.....	24.60	13.00	14.40	18.00	7.50	21.....	7.80	21.70	7.20	9.30	4.00
6.....	20.00	23.40	12.00	17.60	7.00	22.....	10.00	14.00	9.80	14.30	4.00
7.....	14.80	18.80	10.20	14.00	6.80	23.....	14.00	12.00	35.00	14.00	3.90
8.....	11.20	21.00	9.40	11.80	6.20	24.....	12.00	9.60	49.80	18.20	3.70
9.....	8.50	31.90	8.60	17.60	6.00	25.....	9.50	9.00	50.50	16.00	4.00
10.....	7.80	31.00	12.80	22.40	5.80	26.....	8.00	8.60	45.00	14.40	4.80
11.....	7.80	26.40	12.90	19.20	5.80	27.....	7.50	8.00	35.00	24.30	4.30
12.....	7.90	28.90	11.40	14.00	5.70	28.....	7.00	10.00	24.20	28.60	4.00
13.....	12.00	32.40	20.00	11.80	5.50	29.....	7.00	-----	18.60	24.00	4.00
14.....	12.30	28.40	22.40	12.00	5.40	30.....	8.50	-----	17.00	19.40	3.90
15.....	9.80	21.00	15.60	25.60	5.20	31.....	8.50	-----	37.70	-----	-----
16.....	7.00	17.80	12.70	28.20	5.00						

RATING TABLE FOR CAPE FEAR RIVER AT FAYETTEVILLE, N. C., FOR 1890 TO 1896.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.00	489	5.20	2,264	9.40	4,550	13.60	7,033
1.10	519	5.30	2,318	9.50	4,616	13.70	7,093
1.20	550	5.40	2,372	9.60	4,672	13.80	7,153
1.30	581	5.50	2,426	9.70	4,728	13.90	7,213
1.40	612	5.60	2,470	9.80	4,784	14.00	7,273
1.50	645	5.70	2,524	9.90	4,840	14.10	7,333
1.60	678	5.80	2,578	10.00	4,898	14.20	7,393
1.70	711	5.90	2,632	10.10	4,955	14.30	7,453
1.80	744	6.00	2,686	10.20	5,013	14.40	7,513
1.90	777	6.10	2,740	10.30	5,071	14.50	7,573
2.00	810	6.20	2,794	10.40	5,129	14.60	7,633
2.10	843	6.30	2,848	10.50	5,187	14.70	7,693
2.20	876	6.40	2,902	10.60	5,245	14.80	7,753
2.30	909	6.50	2,956	10.70	5,303	14.90	7,813
2.40	942	6.60	3,010	10.80	5,361	15.00	7,873
2.50	975	6.70	3,064	10.90	5,419	15.10	7,933
2.60	1,008	6.80	3,118	11.00	5,477	15.20	7,993
2.70	1,041	6.90	3,172	11.10	5,535	15.30	8,053
2.80	1,075	7.00	3,226	11.20	5,593	15.40	8,113
2.90	1,109	7.10	3,280	11.30	5,653	15.50	8,173
3.00	1,145	7.20	3,334	11.40	5,713	15.60	8,233
3.10	1,187	7.30	3,388	11.50	5,773	15.70	8,293
3.20	1,229	7.40	3,442	11.60	5,833	15.80	8,353
3.30	1,273	7.50	3,496	11.70	5,893	15.90	8,417
3.40	1,319	7.60	3,550	11.80	5,953	16.00	8,479
3.50	1,367	7.70	3,604	11.90	6,013	16.10	8,541
3.60	1,417	7.80	3,658	12.00	6,073	16.20	8,603
3.70	1,467	7.90	3,712	12.10	6,133	16.30	8,665
3.80	1,517	8.00	3,766	12.20	6,193	16.40	8,727
3.90	1,567	8.10	3,822	12.30	6,253	16.50	8,789
4.00	1,620	8.20	3,878	12.40	6,313	16.60	8,851
4.10	1,674	8.30	3,934	12.50	6,373	16.70	8,913
4.20	1,728	8.40	3,990	12.60	6,433	16.80	8,975
4.30	1,782	8.50	4,046	12.70	6,493	16.90	9,037
4.40	1,836	8.60	4,102	12.80	6,553	17.00	9,099
4.50	1,890	8.70	4,158	12.90	6,613	17.10	9,161
4.60	1,940	8.80	4,214	13.00	6,673	17.20	9,223
4.70	1,994	8.90	4,270	13.10	6,733	17.30	9,285
4.80	2,048	9.00	4,326	13.20	6,793	17.40	9,347
4.90	2,102	9.10	4,382	13.30	6,853	17.50	9,409
5.00	2,156	9.20	4,438	13.40	6,913	17.60	9,471
5.10	2,210	9.30	4,494	13.50	6,973	17.70	9,533

RATING TABLE FOR CAPE FEAR RIVER AT FAYETTEVILLE, N. C., FOR 1890-1896—Continued.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
17.80	9,595	19.00	10,339	28.00	22,441	40.00	38,749
17.90	9,657	19.10	10,401	29.00	23,800	41.00	40,108
18.00	9,719	19.20	10,463	30.00	25,159	42.00	41,467
18.10	9,781	19.30	10,525	31.00	26,458	43.00	42,826
18.20	9,843	20.00	11,569	32.00	27,877	44.00	44,185
18.30	9,905	21.00	12,928	33.00	29,236	45.00	45,554
18.40	9,967	22.00	14,287	34.00	30,595	46.00	46,903
18.50	10,029	23.00	15,646	35.00	31,954	47.00	48,262
18.60	10,091	24.00	17,005	36.00	33,313	48.00	49,621
18.70	10,153	25.00	18,364	37.00	34,672	49.00	50,980
18.80	10,215	26.00	19,723	38.00	36,031	50.00	52,339
18.90	10,277	27.00	21,082	39.00	37,390	-----	-----

RATING TABLE FOR CAPE FEAR RIVER AT FAYETTEVILLE, N. C., FOR 1897 AND 1898.

0.0	300	5.8	2,400	11.8	5,780	21.0	13,400
0.1	320	6.0	2,500	12.0	5,900	22.0	14,500
0.2	340	6.2	2,600	12.2	6,020	23.0	15,650
0.4	380	6.4	2,700	12.4	6,140	24.0	16,940
0.6	430	6.6	2,800	12.6	6,260	25.0	18,300
0.8	480	6.8	2,900	12.8	6,380	26.0	19,660
1.0	530	7.0	3,000	13.0	6,500	27.0	21,020
1.2	580	7.2	3,100	13.2	6,640	28.0	22,380
1.4	630	7.4	3,200	13.4	6,780	29.0	23,740
1.6	680	7.6	3,300	13.6	6,920	30.0	25,100
1.8	750	7.8	3,400	13.8	7,060	31.0	26,460
2.0	810	8.0	3,500	14.0	7,200	32.0	27,820
2.2	875	8.2	3,620	14.2	7,340	33.0	29,180
2.4	945	8.4	3,740	14.4	7,480	34.0	30,540
2.6	1,020	8.6	3,860	14.6	7,620	35.0	31,900
2.8	1,100	8.8	3,980	14.8	7,760	36.0	33,260
3.0	1,180	9.0	4,100	15.0	7,900	37.0	34,620
3.2	1,260	9.2	4,220	15.2	8,040	38.0	35,980
3.4	1,340	9.4	4,340	15.4	8,180	39.0	37,240
3.6	1,420	9.6	4,460	15.6	8,320	40.0	38,600
3.8	1,500	9.8	4,580	15.8	8,460	41.0	39,960
4.0	1,580	10.0	4,700	16.0	8,600	42.0	41,320
4.2	1,670	10.2	4,820	16.5	9,000	43.0	42,680
4.4	1,760	10.4	4,940	17.0	9,400	44.0	44,040
4.6	1,850	10.6	5,060	17.5	9,850	45.0	45,400
4.8	1,940	10.8	5,180	18.0	10,300	46.0	46,760
5.0	2,030	11.0	5,300	18.5	10,800	47.0	48,120
5.2	2,120	11.2	5,420	19.0	11,300	48.0	49,480
5.4	2,210	11.4	5,540	19.5	11,800	49.0	50,840
5.6	2,300	11.6	5,660	20.0	12,300	50.0	52,300

RATING TABLE FOR CAPE FEAR RIVER AT FAYETTEVILLE, N. C., FOR 1899 AND 1900.

0.4	330	3.2	1,273	7.5	3,550	14.5	7,633
0.6	375	3.4	1,367	8.0	3,822	15.0	7,933
0.8	429	3.6	1,467	8.5	4,102	16.0	8,541
1.0	489	3.8	1,567	9.0	4,382	17.0	9,161
1.2	550	4.0	1,674	9.5	4,672	18.0	9,787
1.4	612	4.2	1,782	10.0	4,955	19.0	10,401
1.6	678	4.4	1,890	10.5	5,245	20.0	11,569
1.8	744	4.6	1,994	11.0	5,535	25.0	18,364
2.0	810	4.8	2,102	11.5	5,833	30.0	25,159
2.2	876	5.0	2,210	12.0	6,133	35.0	33,600
2.4	946	5.5	2,470	12.5	6,433	40.0	44,000
2.6	1,022	6.0	2,740	13.0	6,733	45.0	54,500
2.8	1,103	6.5	3,010	13.5	7,033	50.0	65,000
3.0	1,187	7.0	3,280	14.0	7,333	-----	-----

RATING TABLE FOR CAPE FEAR RIVER AT FAYETTEVILLE, N. C., FOR 1901.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
3.5	1,400	6.0	2,400	13.0	5,800	26.0	14,250
3.6	1,440	6.2	2,480	13.5	6,075	27.0	15,150
3.7	1,480	6.4	2,560	14.0	6,350	28.0	16,300
3.8	1,520	6.6	2,640	14.5	6,625	29.0	17,450
3.9	1,560	6.8	2,720	15.0	6,900	30.0	18,600
4.0	1,600	7.0	2,800	15.5	7,175	31.0	20,050
4.1	1,640	7.2	2,880	16.0	7,450	32.0	21,500
4.2	1,680	7.4	2,960	16.5	7,725	33.0	22,950
4.3	1,720	7.6	3,050	17.0	8,000	34.0	24,650
4.4	1,760	7.8	3,150	17.5	8,275	35.0	26,350
4.5	1,800	8.0	3,250	18.0	8,550	36.0	28,050
4.6	1,840	8.5	3,500	18.5	8,875	37.0	29,800
4.7	1,880	9.0	3,750	19.0	9,200	38.0	31,550
4.8	1,920	9.5	4,000	19.5	9,525	39.0	33,300
4.9	1,960	10.0	4,250	20.0	9,850	40.0	35,050
5.0	2,000	10.5	4,500	21.0	10,500	41.0	36,800
5.2	2,080	11.0	4,750	22.0	11,150	42.0	38,550
5.4	2,160	11.5	5,000	23.0	11,800	----	----
5.6	2,240	12.0	5,250	24.0	12,450	----	----
5.8	2,320	12.5	5,525	25.0	13,350	----	----

RATING TABLE FOR CAPE FEAR RIVER AT FAYETTEVILLE, N. C., FOR 1902 AND 1903.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet)	Discharge (Second-feet).
0.5	450	3.8	1,620	7.2	3,048	14.5	6,650
0.6	480	4.0	1,700	7.4	3,136	15.0	6,900
0.8	540	4.2	1,780	7.6	3,224	15.5	7,150
1.0	600	4.4	1,860	7.8	3,312	16.0	7,450
1.2	660	4.6	1,940	8.0	3,400	16.5	7,725
1.4	720	4.8	2,020	8.5	3,650	17.0	8,000
1.6	780	5.0	2,100	9.0	3,900	17.5	8,275
1.8	840	5.2	2,180	9.5	4,150	18.0	8,550
2.0	900	5.4	2,260	10.0	4,400	19.0	9,200
2.2	960	5.6	2,344	10.5	4,650	20.0	9,850
2.4	1,060	5.8	2,432	11.0	4,900	25.0	13,350
2.6	1,140	6.0	2,520	11.5	5,150	30.0	18,600
2.8	1,220	6.2	2,608	12.0	5,400	35.0	26,350
3.0	1,300	6.4	2,696	12.5	5,650	40.0	35,050
3.2	1,380	6.6	2,784	13.0	5,900	45.0	43,800
3.4	1,460	6.8	2,872	13.5	6,150	50.0	53,550
3.6	1,540	7.0	2,960	14.0	6,400	----	----

## ESTIMATED MONTHLY DISCHARGE OF CAPE FEAR RIVER AT FAYETTEVILLE, N. C.

[Drainage area, 4,493 square miles.]

NOTE.—For the years 1889 to 1900, inclusive, the discharge curve above 30 feet gage height is not well determined. The discharges above 30 feet gage height are, therefore, approximate for those years. The first discharge measurement was made in 1895. The computed discharges for 1889 to 1892, inclusive, are from measurements made during the years 1895 to 1899. The bed of the stream is believed to have changed but little from 1889 to 1899.

Month.	Discharge in Second-feet.			Run-off.		Rainfall.
	Maximum.	Minimum.	Mean.	Second-feet per Square Mile.	Depth in Inches.	Inches.
1889.						
January.....	41,250	3,570	17,373	3.87	4.46	6.11
February.....	53,250	4,500	17,244	3.84	4.00	3.94
March.....	14,660	2,000	5,441	1.21	1.39	2.99
April.....	13,610	1,910	5,305	1.20	1.34	3.69
May.....	6,580	1,042	1,978	.44	.51	4.85
June.....	46,050	1,910	7,082	1.58	1.76	4.27
July.....	58,150	2,805	20,784	4.63	5.33	10.38
August.....	56,150	2,385	15,881	3.53	4.07	6.60
September.....	8,180	2,135	3,452	.77	.85	3.20
October.....	18,910	1,108	3,348	.75	.86	3.36
November.....	29,330	2,695	7,834	1.74	1.94	4.31
December.....	8,180	1,515	2,451	.54	.63	.59
The year.....	58,150	1,108	9,022	2.01	27.14	54.29
1890.						
January.....	3,245	1,515	1,921	0.43	0.49	1.93
February.....	13,610	1,730	5,073	1.13	1.16	3.77
March.....	16,970	3,050	7,381	1.64	1.89	2.71
April.....	8,580	2,485	3,948	.88	.98	2.20
May.....	8,660	1,275	3,666	.82	.94	4.93
June.....	5,780	1,075	2,435	.54	.62	3.51
July.....	13,610	550	2,763	.62	.71	6.08
August.....	18,360	1,820	7,898	1.77	2.04	3.18
September.....	26,190	1,475	5,397	1.20	1.34	5.34
October.....	16,550	1,275	3,775	.84	.97	5.31
November.....	4,350	1,555	3,125	.70	.78	.22
December.....	13,520	1,730	4,368	.97	1.12	4.15
The year.....	26,190	550	4,312	.96	13.04	43.33
1891.						
January.....	14,870	2,920	6,994	1.56	1.79	5.13
February.....	44,030	3,570	10,419	2.32	2.41	5.12
March.....	48,450	5,140	14,955	3.33	3.84	7.89
April.....	13,610	2,585	6,595	1.47	1.64	2.50
May.....	58,400	1,775	9,274	2.06	2.38	7.86
June.....	28,270	1,515	5,839	1.29	1.43	3.43
July.....	9,060	1,775	3,925	.87	1.00	7.31
August.....	53,490	1,955	15,851	3.53	4.07	9.13
September.....	20,236	1,750	4,864	1.08	1.21	1.36
October.....	4,350	1,315	2,301	.51	.59	1.93
November.....	5,140	1,174	1,660	.37	.41	2.98
December.....	7,460	2,695	3,501	.78	.90	1.84
The year.....	58,400	1,174	7,181	1.60	21.67	56.48



## ESTIMATED MONTHLY DISCHARGE OF CAPE FEAR RIVER AT FAYETTEVILLE, N. C.—Continued.

Month.	Discharge in Second-feet.			Run-off.		Rainfall.
	Maximum.	Minimum.	Mean.	Second-feet per Square Mile.	Depth in Inches.	Inches.
1892.						
January.....	69,700	2,920	14,162	3.15	3.63	6.28
February.....	18,470	2,920	4,676	1.04	1.12	3.20
March.....	20,382	2,805	5,981	1.31	1.51	2.93
April.....	34,090	3,440	8,090	1.80	2.01	2.56
May.....	8,500	2,885	3,437	.76	.88	4.05
June.....	13,610	1,865	5,506	1.23	1.37	5.90
July.....	11,010	1,475	5,336	1.19	1.37	5.75
August.....	2,285	440	1,410	.31	.36	2.95
September.....	3,180	464	1,294	.29	.32	2.33
October.....	976	440	604	.13	.15	.46
November.....	3,245	440	1,413	.31	.35	3.60
December.....	8,500	700	2,054	.46	.53	2.95
The year.....	69,700	440	4,488	1.00	13.60	42.96
1893.						
January.....	16,461	1,145	3,865	0.86	0.99	2.81
February.....	41,873	3,010	18,596	4.14	4.31	6.11
March.....	12,453	2,264	4,356	.97	1.12	1.48
April.....	3,334	1,517	2,211	.49	.55	2.03
May.....	27,137	1,145	3,046	.68	.78	5.31
June.....	16,627	1,367	3,619	.80	.89	5.38
July.....	2,470	519	1,063	.24	.28	3.13
August.....	19,587	550	2,798	.62	.71	7.52
September.....	37,380	1,417	9,341	2.08	2.32	5.81
October.....	41,467	1,417	8,454	1.88	2.17	6.56
November.....	6,613	1,890	2,692	.60	.67	1.70
December.....	19,723	2,578	5,750	1.28	1.48	2.93
The year.....	41,873	519	5,483	1.22	16.27	50.77
1894.						
January.....	21,082	2,740	6,911	1.54	1.78	4.03
February.....	22,441	3,768	7,820	1.74	1.81	3.67
March.....	22,712	2,686	5,973	1.33	1.53	1.51
April.....	4,102	1,367	2,207	.49	.55	1.61
May.....	5,245	1,229	2,418	.54	.62	4.48
June.....	3,384	489	1,006	.22	.25	2.33
July.....	7,393	678	1,911	.43	.48	6.34
August.....	31,137	1,417	7,193	1.60	1.84	5.50
September.....	9,099	612	2,330	.55	.61	5.09
October.....	49,485	2,318	9,770	1.95	2.25	6.76
November.....	11,569	1,940	3,779	.83	.92	1.75
December.....	9,967	1,674	3,386	.75	.86	2.85
The year.....	49,485	489	4,559	1.00	13.40	46.53
1895.						
January.....	90,650	2,632	18,334	4.08	4.70	7.36
February.....	22,441	4,214	9,299	2.07	2.15	2.38
March.....	40,108	4,550	13,867	3.09	3.56	5.71
April.....	49,213	3,990	15,646	3.48	3.89	9.21
May.....	44,728	3,280	5,500	1.22	1.41	3.64
June.....	6,193	1,620	2,012	.65	.72	4.08
July.....	12,928	1,728	3,833	.85	.96	5.66
August.....	11,840	1,187	3,439	.76	.87	5.29
September.....	2,156	581	1,232	.27	.30	.62
October.....	810	399	608	.14	.16	1.70
November.....	4,270	1,075	1,833	.41	.46	3.26
December.....	10,029	1,008	2,737	.61	.70	3.88
The year.....	90,650	399	6,603	1.48	19.90	52.79

## ESTIMATED MONTHLY DISCHARGE OF CAPE FEAR RIVER AT FAYETTEVILLE, N. C.—Continued.

Month.	Discharge in Second-feet.			Run-off.		Rainfall.
	Maxi- mum.	Mini- mum.	Mean.	Second- feet per Square Mile.	Depth in Inches.	Inches.
1896.						
January.....	19,723	1,620	6,273	1.40	1.61	2.78
February.....	49,621	2,956	14,436	3.21	3.46	6.63
March.....	5,477	2,318	3,498	.78	.90	2.27
April.....	14,287	1,367	3,216	.72	.80	1.62
May.....	6,553	843	2,774	.62	.71	4.88
June.....	11,569	1,041	3,593	.80	.89	6.94
July.....	52,340	1,319	10,827	2.41	2.78	7.11
August.....	1,782	612	1,116	.25	.29	1.67
September.....	4,616	430	1,435	.32	.36	7.59
October.....	26,458	843	3,210	.71	.82	1.42
November.....	10,339	975	2,435	.54	.60	4.03
December.....	8,113	1,940	4,058	.90	1.04	2.14
The year.....	52,340	430	4,739	1.06	14.26	49.08
1897.						
January.....	17,688	1,580	3,694	0.82	0.94	2.29
February.....	33,688	2,255	12,802	2.85	2.97	5.23
March.....	35,708	3,100	12,233	2.72	3.14	4.79
April.....	22,788	1,760	6,871	1.53	1.71	3.46
May.....	9,760	1,580	3,191	.71	.82	4.58
June.....	3,800	750	1,833	.41	.46	3.34
July.....	18,708	780	3,180	.71	.82	6.63
August.....	2,900	875	1,570	.35	.40	3.74
September.....	1,850	360	664	.15	.17	1.68
October.....	875	340	517	.12	.14	2.25
November.....	4,520	630	1,281	.29	.32	3.82
December.....	4,700	1,180	2,165	.48	.55	2.56
The year.....	35,708	340	4,166	.93	12.44	44.37
1898.						
January.....	7,333	1,319	2,126	0.47	0.54	2.00
February.....	2,740	1,145	1,735	.39	.41	.92
March.....	12,249	1,273	3,303	.74	.85	4.38
April.....	13,608	1,620	4,395	.98	1.09	3.38
May.....	6,133	1,145	2,369	.53	.61	3.68
June.....	3,280	519	1,181	.26	.29	2.92
July.....	8,665	489	2,793	.62	.71	5.68
August.....	24,072	910	5,655	1.26	1.45	7.80
September.....	10,277	876	3,674	.82	.91	3.79
October.....	4,955	612	1,739	.39	.45	4.30
November.....	7,333	1,417	2,982	.66	.73	3.16
December.....	9,781	1,994	3,387	.75	.86	2.17
The year.....	24,072	489	2,945	.66	8.90	44.18
1899.						
January.....	16,462	1,940	5,116	1.14	1.31	4.02
February.....	69,200	4,955	25,842	5.75	5.98	8.31
March.....	48,200	4,214	17,042	3.79	4.31	6.85
April.....	34,600	3,064	8,408	1.87	2.09	3.17
May.....	9,347	1,782	3,706	.82	.85	4.01
June.....	5,593	984	2,280	.51	.57	3.37
July.....	6,613	910	2,481	.55	.63	6.79
August.....	5,833	645	1,947	.43	.44	2.14
September.....	2,578	612	1,133	.25	.28	3.58
October.....	9,161	612	2,132	.47	.54	4.65
November.....	13,482	1,319	3,151	.70	.78	1.89
December.....	7,333	1,674	2,992	.67	.77	3.24
The year.....	69,200	612	6,352	1.41	18.65	52.02

## ESTIMATED MONTHLY DISCHARGE OF CAPE FEAR RIVER AT FAYETTEVILLE, N. C.—Continued.

Month.	Discharge in Second-feet.			Run-off.		Rainfall.
	Maximum.	Minimum.	Mean.	Second-feet per Square Mile.	Depth in Inches.	Inches.
1900.						
January.....	13,336	1,620	4,001	0.89	1.03	2.47
February.....	35,600	1,890	10,068	2.24	2.33	5.20
March.....	31,060	3,280	8,649	1.92	2.21	4.53
April.....	52,400	2,524	11,848	2.64	2.94	4.68
May.....	9,781	1,467	2,969	.66	.76	3.04
June.....	9,409	984	2,688	.60	.67	5.50
July.....	6,133	459	1,472	.33	.38	3.49
August.....	1,940	350	736	.16	.18	3.00
September.....	5,187	310	1,010	.22	.25	2.74
October.....	1,145	375	526	.12	.14	2.18
November.....	6,433	350	1,258	.28	.31	3.77
December.....	8,541	843	2,816	.63	.73	4.20
The year.....	52,400	310	4,003	.89	11.93	44.80
1901.						
January.....	7,120	1,600	3,048	0.68	0.78	2.47
February.....	4,850	1,560	2,659	.89	.61	1.68
March.....	28,050	1,200	4,209	.94	1.08	3.88
April.....	49,065	2,440	9,624	2.14	2.39	5.34
May.....	71,625	1,560	11,502	2.56	2.95	8.75
June.....	11,800	1,760	4,352	.97	1.08	5.68
July.....	37,675	1,520	8,072	1.80	2.06	8.11
August.....	43,450	1,440	13,965	3.11	3.59	11.85
September.....	41,350	1,600	7,296	1.62	1.81	5.47
October.....	4,450	1,400	2,342	.52	.60	1.13
November.....	2,440	1,400	1,555	.35	.39	1.34
December.....	27,200	1,440	3,828	.85	.98	5.18
The year.....	71,625	1,200	6,038	1.34	18.34	60.88
1902.						
January.....	27,200	2,180	5,353	1.19	1.37	2.35
February.....	35,575	2,872	11,746	2.61	2.72	5.73
March.....	37,825	3,048	9,612	2.14	2.47	3.16
April.....	7,890	2,140	3,695	.82	.91	3.18
May.....	2,960	1,540	2,159	.48	.55	2.63
June.....	3,400	870	1,466	.33	.37	3.46
July.....	1,860	600	965	.21	.24	2.88
August.....	1,460	660	961	.21	.24	3.59
September.....	3,700	450	1,074	.24	.27	5.24
October.....	3,400	780	1,633	.36	.42	3.26
November.....	4,400	810	1,540	.34	.38	3.64
December.....	10,890	2,220	4,956	1.10	1.27	3.67
The year.....	37,825	450	3,763	.84	11.21	42.79

## HAW RIVER AT MONCURE, N. C.

This station is located about one and three-fourths miles north of Moncure, Chatham County, North Carolina, at the bridge of the Seaboard Air Line which crosses the river here, and about two miles above the junction with the Deep River to form the Cape Fear.

The station was established May 6, 1898, and was discontinued at the end of 1899.

## DISCHARGE MEASUREMENTS OF HAW RIVER AT MONCURE, N. C.

Date.	Hydrographer.	Gage Height (Feet).	Discharge (Second-feet).
1898.			
May 6	E. W. Myers.....	1.56	495
Aug. 19	do.....	15.40	7,925
1899.			
Feb. 4	E. W. Myers.....	8.96	5,594
May 26	do.....	2.20	751
June 5	do.....	2.99	1,275
Oct. 12	do.....	1.85	756
Nov. 26	do.....	1.37	358

## DAILY GAGE HEIGHT, IN FEET, OF HAW RIVER AT MONCURE, N. C., FOR 1898.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....		2.16	1.88	1.88	4.12	1.60	5.34	3.24
2.....		2.10	1.65	1.96	3.18	1.48	4.28	2.88
3.....		1.92	1.60	1.86	2.38	1.66	3.44	2.52
4.....		1.85	1.40	1.80	7.40	1.38	2.62	6.62
5.....		1.50	1.20	1.60	11.88	2.00	2.55	7.44
6.....	1.30	1.60	1.80	1.60	7.78	2.86	2.12	6.48
7.....	5.00	1.50	7.38	1.62	5.22	2.94	2.10	5.20
8.....	4.50	1.52	3.12	1.50	5.46	2.86	3.00	4.26
9.....	3.65	1.60	2.30	1.22	4.45	1.72	2.76	3.28
10.....	3.00	1.50	1.90	1.20	3.74	1.48	2.25	3.16
11.....	2.50	1.44	2.00	1.30	2.32	1.54	2.42	2.94
12.....	2.23	1.40	1.38	1.76	2.10	1.60	2.12	2.25
13.....	1.87	1.40	1.40	2.70	2.04	1.52	2.38	2.54
14.....	3.10	1.30	1.70	5.98	1.64	1.50	2.67	2.40
15.....	2.60	2.10	1.85	5.30	1.65	1.51	3.24	2.36
16.....	2.00	3.10	1.60	3.00	1.60	1.34	3.00	2.22
17.....	2.30	1.70	1.60	2.94	1.62	1.23	5.23	2.20
18.....	2.20	1.70	5.60	3.86	1.65	1.66	6.44	2.34
19.....	2.22	2.30	3.40	10.30	1.62	2.65	6.08	2.12
20.....	2.00	2.95	4.10	15.85	1.64	1.27	5.62	2.78
21.....	1.80	3.34	2.44	14.92	1.46	1.94	4.28	2.41
22.....	1.74	2.60	1.92	10.64	1.44	7.64	3.84	2.22
23.....	1.60	2.10	4.98	7.25	11.35	5.56	3.02	3.46
24.....	8.20	1.22	2.80	5.18	9.14	3.28	2.84	3.21
25.....	6.14	1.30	2.34	3.32	5.28	2.42	2.06	3.34
26.....	4.46	1.64	2.12	2.14	4.00	2.50	2.00	2.78
27.....	4.00	1.52	1.90	2.18	2.64	2.14	2.48	2.37
28.....	3.10	1.58	2.38	2.25	2.32	2.22	2.92	2.30
29.....	2.42	1.85	2.10	2.38	1.88	1.88	2.58	2.48
30.....	2.00	1.90	2.16	7.14	1.52	7.16	2.92	2.36
31.....	2.00		1.98	4.97		9.98		2.34

DAILY GAGE HEIGHT, IN FEET, OF HAW RIVER AT MONCURE, N. C., FOR 1899.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	2.03	4.98	15.70	5.54	2.94	2.62	1.43	4.16	1.07	1.04	10.53	1.28
2.....	3.68	4.48	9.06	4.68	2.70	2.60	1.31	3.42	.96	1.02	6.87	1.16
3.....	3.30	4.30	9.98	4.46	2.60	3.94	1.20	2.68	.91	.82	3.96	1.54
4.....	2.86	8.70	15.66	3.92	2.42	3.56	1.18	2.26	1.04	.82	4.61	1.52
5.....	2.84	16.40	18.48	3.86	2.38	2.98	7.90	1.48	1.02	.85	3.54	1.48
6.....	2.48	22.42	14.84	8.84	2.44	2.20	2.24	1.42	1.03	7.65	2.66	1.32
7.....	12.08	24.66	13.56	4.86	1.98	1.84	2.08	4.85	.98	5.62	2.09	1.30
8.....	10.32	26.13	9.41	11.12	7.86	1.62	2.22	4.92	.98	7.37	1.64	1.12
9.....	8.62	26.62	6.68	13.42	6.14	1.40	1.22	4.90	1.00	5.98	1.67	1.06
10.....	4.98	17.70	5.16	7.08	4.50	1.52	1.04	4.46	2.51	4.13	1.62	1.12
11.....	3.84	12.34	4.52	5.98	4.42	2.45	1.70	2.02	2.84	2.97	1.57	1.22
12.....	3.62	6.92	4.34	4.64	4.98	5.18	1.46	1.56	3.40	1.80	1.57	3.12
13.....	3.94	6.62	4.06	4.12	8.06	4.44	1.38	1.58	1.70	1.62	1.33	1.84
14.....	5.14	5.84	6.34	3.70	8.62	4.12	1.20	1.20	1.90	1.35	1.31	1.82
15.....	11.62	5.46	22.07	3.38	5.04	2.94	1.30	1.14	1.24	1.29	1.43	1.68
16.....	7.96	7.42	23.36	3.62	4.10	2.55	1.23	1.80	1.20	1.34	1.15	1.36
17.....	6.88	18.92	17.18	3.08	3.86	2.40	1.14	1.52	1.16	1.11	1.08	1.52
18.....	5.04	18.38	8.62	2.95	2.90	1.72	1.32	1.26	1.12	1.29	1.32	1.48
19.....	4.44	18.41	14.93	2.82	2.92	1.60	1.34	1.42	1.98	1.24	1.42	1.44
20.....	3.70	14.72	14.34	2.70	2.86	1.62	1.28	1.06	1.02	1.21	1.44	1.28
21.....	4.16	11.62	10.98	2.80	2.00	1.54	1.30	1.04	1.07	1.22	1.40	1.32
22.....	2.90	9.18	7.61	2.64	1.92	1.33	1.36	.92	1.46	1.20	1.38	1.26
23.....	2.98	8.26	5.44	3.44	2.94	1.59	1.34	.90	1.18	1.07	1.43	1.18
24.....	3.08	7.28	4.92	2.40	2.96	1.48	1.23	1.08	1.08	.94	1.26	1.54
25.....	3.16	5.40	4.72	2.42	2.62	1.36	1.28	1.08	2.04	.94	1.28	1.56
26.....	3.18	6.18	4.62	4.84	2.32	1.30	1.50	1.30	1.38	1.13	1.32	1.52
27.....	3.15	6.84	4.07	5.08	2.06	1.20	7.14	.92	1.24	1.17	1.98	1.38
28.....	3.10	13.58	6.34	4.10	1.90	1.38	6.30	1.00	1.06	1.04	2.84	1.32
29.....	2.50	-----	10.58	3.52	1.84	1.10	3.48	1.06	1.09	1.19	2.90	1.24
30.....	3.32	-----	7.46	2.98	2.20	1.54	2.02	1.40	.98	1.92	2.56	1.14
31.....	3.98	-----	6.34	-----	3.16	-----	5.68	1.18	-----	3.46	-----	2.38

RATING TABLE FOR HAW RIVER AT MONCURE, N. C., FOR 1898 AND 1899.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.0	290	3.4	1,690	7.0	4,760	13.0	10,600
1.2	350	3.6	1,850	7.5	5,210	13.5	11,100
1.4	415	3.8	2,010	8.0	5,660	14.0	11,600
1.6	500	4.0	2,170	8.5	6,110	14.5	12,100
1.8	600	4.2	2,340	9.0	6,600	15.0	12,600
2.0	700	4.4	2,510	9.5	7,100	16.0	13,600
2.2	820	4.6	2,680	10.0	7,600	17.0	14,600
2.4	950	4.8	2,850	10.5	8,100	18.0	15,600
2.6	1,090	5.0	3,020	11.0	8,600	19.0	16,600
2.8	1,230	5.5	3,445	11.5	9,100	20.0	17,600
3.0	1,370	6.0	3,870	12.0	9,600	25.0	22,600
3.2	1,530	6.5	4,310	12.5	10,100	-----	-----

ESTIMATED MONTHLY DISCHARGE OF HAW RIVER AT MONCURE, N. C.  
[Drainage area, 1,800 square miles.]

Month.	Discharge in Second-feet.			Total in Acre-feet.	Run-off.	
	Maxi- mum.	Mini- mum.	Mean.		Second- feet per Square Mile.	Depth in Inches.
1898.						
May, 26 days.....	5,795	380	1,453	89,341	0.81	0.93
June.....	1,570	320	613	36,476	0.34	0.38
July.....	4,585	320	955	58,720	0.53	0.61
August.....	13,250	290	2,545	156,486	1.41	1.63
September.....	9,250	345	2,077	123,590	1.15	1.28
October.....	7,300	290	1,097	67,452	0.61	0.70
November.....	3,998	575	1,496	89,018	0.83	0.92
December.....	4,895	600	1,255	77,167	0.70	0.81
1899.						
January.....	9,700	730	2,840	174,625	1.58	1.82
February.....	24,200	2,425	9,860	547,597	5.48	5.71
March.....	21,000	2,213	7,816	480,587	4.34	5.00
April.....	11,000	950	2,790	166,017	1.55	1.73
May.....	6,200	625	1,881	115,658	1.05	1.21
June.....	3,190	320	944	56,172	0.52	0.58
July.....	5,570	305	1,019	62,656	0.57	0.66
August.....	2,935	270	856	52,633	0.48	0.55
September.....	1,690	270	465	27,669	0.26	0.29
October.....	5,390	280	1,028	63,209	0.57	0.66
November.....	8,100	320	1,116	66,407	0.62	0.69
December.....	1,450	305	464	28,530	0.26	0.30
The year.....	24,200	270	2,590	1,841,760	1.44	19.20

## DEEP RIVER AT MONCURE, N. C.

This station is located about one-fourth of a mile south of Moncure, Chatham County, North Carolina, at the covered wooden bridge of the Seaboard Air Line which crosses the river here, and about two miles above the junction with the Haw River to form the Cape Fear.

This station was established May 5, 1898, and discontinued at the end of 1899.

## DISCHARGE MEASUREMENTS OF DEEP RIVER AT MONCURE, N. C.

Date.	Hydrographer.	Gage Height (Feet).	Discharge (Second-feet).
1898.			
May 6	E. W. Myers	2.00	403
Aug. 20	do	17.20	14,994
1899.			
Feb. 4	E. W. Myers	7.03	4,590
May 27	do	2.16	447
June 5	do	2.51	610
Oct. 12	do	1.89	449
Nov. 26	do	1.32	290

DAILY GAGE HEIGHT, IN FEET, OF DEEP RIVER AT MONCURE, N. C., FOR 1898-1899.

1898. (Day)	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....		1.75	1.76	1.12	3.82	1.52	5.72	2.95
2.....		1.50	1.53	2.00	3.50	1.92	4.89	3.27
3.....		1.02	1.34	1.80	2.64	1.88	3.22	3.20
4.....		1.50	1.20	2.00	4.84	1.54	2.78	7.90
5.....	1.96	1.42	1.14	1.98	12.62	2.92	2.44	9.49
6.....	1.90	1.20	2.80	1.52	8.67	2.84	2.14	6.34
7.....	2.30	1.25	7.80	1.50	7.14	2.74	3.92	5.42
8.....	3.50	1.20	4.52	1.24	5.72	2.22	3.64	4.60
9.....	3.70	1.24	2.90	1.22	5.88	1.68	2.98	3.14
10.....	2.74	1.20	2.16	1.20	4.22	1.56	2.76	3.00
11.....	2.40	1.14	3.60	1.46	3.40	1.54	2.51	2.34
12.....	2.00	1.54	2.40	1.50	2.48	1.51	2.16	2.32
13.....	1.74	1.20	1.72	2.66	2.08	1.60	3.28	2.30
14.....	2.65	1.22	1.84	8.12	1.85	1.54	2.70	2.28
15.....	2.20	1.30	1.72	12.10	1.08	1.52	2.52	2.25
16.....	2.10	1.35	1.78	3.82	1.98	1.36	3.51	2.26
17.....	1.94	2.10	1.75	2.68	1.67	1.32	2.13	2.12
18.....	2.00	1.94	4.00	4.88	1.52	1.92	5.54	2.25
19.....	2.10	1.82	2.74	9.00	1.50	3.56	6.28	2.30
20.....	1.98	2.24	2.86	19.10	1.56	3.22	4.94	2.10
21.....	1.76	2.65	2.12	18.84	1.48	2.42	4.08	2.54
22.....	1.64	2.98	1.16	14.13	1.19	8.98	3.76	2.32
23.....	1.50	2.38	4.22	9.62	2.22	6.00	2.96	4.18
24.....	6.20	1.94	3.14	5.37	10.44	3.56	2.48	3.70
25.....	6.54	1.72	2.32	3.12	4.56	3.44	2.21	3.28
26.....	4.96	1.35	1.94	3.00	3.65	2.98	2.05	3.22
27.....	3.48	1.36	1.98	2.57	2.68	2.21	2.34	2.48
28.....	2.28	1.22	1.90	3.30	2.14	2.01	2.24	2.76
29.....	2.20	1.24	1.82	3.52	1.96	1.99	2.31	2.72
30.....	1.98	1.78	1.88	6.73	1.80	6.70	3.10	2.40
31.....	1.70		1.82	5.58		8.76		2.26

1899. (Day)	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	2.03	4.58	6.91	7.12	2.99	2.84	1.52	4.54	0.85	0.83	12.74	2.77
2.....	3.21	5.00	6.25	4.70	2.85	2.61	1.36	4.36	.79	.78	5.80	1.85
3.....	3.41	6.78	6.39	4.52	2.56	3.45	1.34	3.46	.75	.88	4.23	1.83
4.....	3.27	7.06	13.25	5.16	2.51	3.13	1.18	3.08	.91	.79	3.48	2.19
5.....	2.79	16.40	14.43	8.64	2.29	2.49	4.20	1.46	.73	.87	3.04	2.15
6.....	2.47	20.48	15.77	6.18	2.25	1.95	2.42	1.20	.71	7.20	2.74	1.49
7.....	10.27	23.21	15.67	6.40	2.47	1.65	2.72	4.54	.89	6.49	2.24	1.27
8.....	9.13	25.92	13.62	17.76	8.85	1.49	2.11	4.11	1.19	6.70	1.91	1.19
9.....	7.71	20.90	10.61	15.04	6.09	1.58	2.19	4.15	1.10	7.11	1.86	1.11
10.....	5.59	18.70	7.39	8.28	4.43	2.55	2.10	3.37	1.82	3.96	.84	1.19
11.....	4.99	12.26	5.05	6.16	3.85	3.23	1.79	1.39	2.10	3.19	.89	4.03
12.....	5.83	7.19	4.41	5.40	5.89	4.72	1.67	1.41	2.55	1.97	1.09	5.95
13.....	6.07	6.98	4.67	4.86	7.99	3.78	1.34	1.25	2.04	1.72	1.02	4.09
14.....	9.70	6.06	3.91	4.48	9.23	3.40	1.19	1.21	4.86	1.59	1.09	3.39
15.....	13.07	5.10	21.19	3.76	5.09	2.56	1.09	1.29	1.96	1.31	.96	2.35
16.....	8.61	6.76	22.51	3.98	4.46	2.42	1.28	1.31	1.04	1.17	.98	1.39
17.....	7.91	16.20	16.21	4.10	3.97	2.40	.90	1.17	.93	1.27	1.08	1.34
18.....	6.93	21.26	9.99	4.04	3.75	1.68	1.14	1.09	.84	1.04	1.26	1.47
19.....	5.99	19.34	14.09	3.54	3.69	1.58	1.11	1.25	.87	1.08	1.14	1.39
20.....	4.73	15.30	15.31	3.32	3.05	1.49	1.02	.88	1.71	1.12	1.02	.63
21.....	3.15	9.92	9.02	3.46	2.89	1.50	1.02	.74	1.99	.97	.98	1.27
22.....	3.36	9.05	7.15	2.97	2.67	1.47	1.02	.78	1.49	.90	1.10	1.13
23.....	3.08	8.22	5.87	3.10	3.25	1.77	1.19	.90	1.17	.87	1.05	1.07
24.....	3.17	7.92	5.43	2.96	2.85	1.37	1.11	.95	.87	.85	1.04	1.19
25.....	3.25	6.24	4.91	2.97	2.75	1.55	1.52	1.06	2.34	.91	1.00	1.13
26.....	3.27	6.92	4.41	5.60	2.51	1.57	1.67	.84	1.53	.92	1.32	1.11
27.....	3.54	12.94	4.14	5.54	2.25	1.71	5.19	1.00	1.35	1.01	1.92	1.07
28.....	3.19	18.22	7.07	4.46	2.02	2.15	4.35	.96	1.09	.98	1.83	.95
29.....	2.55		11.65	3.50	1.91	1.68	3.77	1.20	1.17	.94	3.78	1.03
30.....	2.21		10.31	3.04	2.54	1.60	2.11	1.22	1.04	.89	2.84	.97
31.....	3.23		8.44		2.96		6.28	.89		1.13		1.03

RATING TABLE FOR DEEP RIVER AT MONCURE, N. C., FOR 1898 AND 1899.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
0.6	210	3.2	1,070	7.0	4,600	13.5	11,100
0.8	230	3.4	1,240	7.5	5,100	14.0	11,600
1.0	250	3.6	1,410	8.0	5,600	14.5	12,100
1.2	290	3.8	1,580	8.5	6,100	15.0	12,600
1.4	330	4.0	1,750	9.0	6,600	16.0	13,680
1.6	380	4.2	1,940	9.5	7,100	17.0	14,780
1.8	440	4.4	2,130	10.0	7,600	18.0	15,880
2.0	500	4.6	2,320	10.5	8,100	19.0	16,980
2.2	560	4.8	2,510	11.0	8,600	20.0	18,080
2.4	630	5.0	2,700	11.5	9,100	25.0	23,580
2.6	715	5.5	3,175	12.0	9,600	-----	-----
2.8	805	6.0	3,650	12.5	10,100	-----	-----
3.0	900	6.5	4,125	13.0	10,600	-----	-----

ESTIMATED MONTHLY DISCHARGE OF DEEP RIVER AT MONCURE, N. C.

[Drainage area, 1,400 square miles.]

Month.	Discharge in Second-feet.			Total in Acre-feet.	Run-off.	
	Maxi- mum.	Mini- mum.	Mean.		Second- feet per Square Mile.	Depth in Inches
1898.						
May, 27 days* -----	4,125	340	951	50,929	0.68	0.78
June -----	850	270	378	22,493	0.27	0.30
July -----	5,300	260	818	50,297	0.58	0.67
August -----	16,980	250	3,181	195,592	2.27	2.62
September -----	10,100	260	1,811	107,762	1.29	1.44
October -----	6,200	280	1,001	61,549	0.72	0.83
November -----	-----	-----	1,138	67,716	0.81	0.90
December -----	-----	-----	1,281	78,766	0.92	1.06
1899.						
January -----	10,650	515	2,876	176,838	2.05	2.37
February -----	24,570	2,320	10,109	561,425	7.22	7.52
March -----	21,930	1,665	7,413	455,808	5.30	6.11
April -----	15,605	875	3,278	195,055	2.34	2.61
May -----	6,850	470	1,759	108,157	1.26	1.45
June -----	2,415	325	673	40,046	0.48	0.54
July -----	3,935	240	701	43,103	0.50	0.58
August -----	2,273	225	651	40,028	0.47	0.54
September -----	2,558	220	408	24,278	0.29	0.32
October -----	4,800	230	888	54,601	0.63	0.72
November -----	10,350	235	940	55,934	0.67	0.74
December -----	3,603	245	601	36,954	0.43	0.49
The year -----	24,570	220	2,525	1,792,227	1.80	23.99

\*Approximate.



## DEEP RIVER AT CUMNOCK, N. C.

This station was established on June 29, 1900. It is 300 yards northwest of the railroad station at Cumnock. The wire gage, which is graduated to feet and tenths, is nailed to the guard rail of the bridge. When the gage reads 3 feet the water surface is 37.41 feet below the top of the lower chord at the side of the tension rod supporting the floor beam opposite the gage. The channel is straight for several hundred feet above and below the bridge, but the current is rather sluggish during low water. The bed of the stream is muddy, with some bowlders. The observer is J. A. Rollins, a watchman at Cumnock. The station was discontinued in June, 1902.

## DISCHARGE MEASUREMENTS OF DEEP RIVER AT CUMNOCK, N. C.

Date.	Hydrographer.	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second-feet).
1900.					
June 29	E. W. Myers			3.00	540
Aug. 11	do.			1.30	112
Nov. 5	do.			4.55	1,118
Dec. 19	do.			1.70	199
1901.					
Mar. 27				30.50	22,425
Apr. 6				5.60	1,671
July 15				18.25	12,013
Nov. 28				2.24	204
1902.					
July 11	B. S. Drane	532	.42	1.91	224
Aug. 18	do.	505	.45	1.81	228

## DAILY GAGE HEIGHT, IN FEET, OF DEEP RIVER AT CUMNOCK, N. C., FOR 1900.

Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	2.24	1.54	2.02	1.31	1.32	1.58	17.....	(*)	1.75	4.40	1.95	1.69	1.58
2.....	2.04	1.54	1.79	1.35	1.24	1.70	18.....	(*)	1.20	2.04	1.66	1.39	1.38
3.....	1.85	1.65	1.69	1.14	1.39	2.94	19.....	(*)	.85	1.92	1.57	1.80	1.75
4.....	2.95	1.37	1.47	1.21	9.19	6.96	20.....	1.24	1.14	1.78	1.39	1.72	1.70
5.....	2.14	1.35	1.34	1.10	5.43	9.99	21.....	.72	1.10	1.67	1.34	1.71	5.77
6.....	1.87	1.53	1.35	1.16	2.89	4.66	22.....	.96	1.12	1.45	1.38	1.80	8.23
7.....	(*)	1.34	1.44	1.00	2.26	3.17	23.....	1.25	1.45	1.43	1.43	1.39	4.63
8.....	(*)	1.13	1.36	1.28	1.88	2.26	24.....	1.88	2.34	1.53	1.50	1.44	3.31
9.....	(*)	1.18	1.27	1.50	1.83	2.13	25.....	1.54	1.76	1.55	1.36	1.28	3.10
10.....	(*)	1.29	1.37	1.77	1.68	1.90	26.....	1.50	1.46	1.56	1.28	1.82	2.95
11.....	(*)	1.30	1.37	1.82	1.60	1.72	27.....	4.27	1.41	1.51	1.34	1.86	2.88
12.....	(*)	1.20	1.32	1.60	1.50	1.74	28.....	3.39	1.34	1.55	1.14	1.55	2.24
13.....	(*)	1.27	1.37	1.46	1.40	1.85	29.....	2.35	1.25	1.50	1.30	1.45	2.23
14.....	(*)	1.30	1.45	1.32	1.34	1.70	30.....	1.90	2.35	1.21	1.33	1.80	2.35
15.....	(*)	1.43	1.50	2.11	1.33	1.50	31.....	1.54	2.59		1.40		9.22
16.....	(*)	1.37	8.52	2.11	1.62	1.66							

\*No record.

DAILY GAGE HEIGHT, IN FEET, OF DEEP RIVER AT CUMNOCK, N. C., FOR 1901.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	6.75	3.35	2.00	13.23	1.73	4.59	6.04	2.65	7.05	2.66	2.58	2.20
2.....	4.84	3.07	1.97	14.80	1.59	3.79	4.87	2.52	7.21	2.61	2.12	2.18
3.....	3.90	3.18	1.91	12.06	1.15	3.80	3.32	2.31	4.70	2.53	2.09	2.25
4.....	2.92	6.96	1.87	9.51	1.11	3.89	3.21	2.53	4.20	3.06	2.06	2.27
5.....	2.48	5.71	1.82	7.52	1.11	3.94	3.15	3.07	4.01	2.94	2.03	2.24
6.....	2.04	4.75	1.91	4.82	1.11	3.59	3.09	5.53	3.85	2.68	2.00	2.20
7.....	2.90	3.25	1.90	2.67	1.14	2.81	3.86	13.33	3.49	2.67	1.99	2.18
8.....	2.51	2.92	1.90	2.20	1.05	2.75	3.71	20.02	2.56	2.57	2.06	2.13
9.....	2.08	4.27	1.88	1.96	1.02	2.58	5.48	18.03	2.49	2.51	2.13	2.12
10.....	2.02	4.71	1.93	1.74	2.00	2.49	7.25	14.84	2.41	2.49	2.11	2.10
11.....	1.98	4.90	2.38	1.56	2.96	2.34	4.43	10.56	2.35	2.46	2.09	2.09
12.....	2.48	3.97	2.73	1.27	2.68	2.44	2.76	6.11	2.27	2.40	2.19	2.09
13.....	9.55	3.45	2.75	1.17	2.34	2.72	2.94	7.86	2.21	4.62	2.21	2.12
14.....	5.08	3.06	2.45	8.98	2.25	3.43	14.25	8.42	2.83	4.57	2.19	2.22
15.....	3.27	2.91	2.40	6.35	2.15	3.83	20.04	11.38	3.17	3.64	2.11	8.03
16.....	2.41	2.60	2.20	4.37	1.69	11.32	11.25	13.84	3.33	2.80	2.09	6.61
17.....	5.70	2.47	2.11	3.39	1.18	15.73	8.52	11.45	3.62	2.67	2.08	4.08
18.....	7.03	2.37	2.06	2.13	1.16	13.05	6.11	10.53	12.18	2.60	2.06	3.25
19.....	4.96	2.27	1.75	2.08	1.96	9.04	16.13	10.27	14.41	2.55	2.03	3.23
20.....	3.12	2.20	1.69	2.56	2.01	4.67	17.44	8.97	16.62	2.49	2.01	3.26
21.....	2.75	2.24	1.99	10.65	2.37	3.55	7.15	7.85	11.14	2.45	1.99	3.22
22.....	2.70	2.20	1.93	8.89	11.99	3.43	3.99	7.12	6.25	2.41	2.15	3.18
23.....	2.48	2.05	1.91	5.03	(*)	3.75	3.72	6.44	4.64	2.38	2.21	3.00
24.....	2.41	2.11	1.86	4.97	(*)	4.15	3.54	9.24	3.58	2.36	2.35	3.38
25.....	2.62	2.18	10.65	4.65	(*)	5.89	3.32	10.70	3.33	2.34	2.35	3.68
26.....	2.33	2.59	36.03	2.65	7.70	10.94	2.82	5.44	3.16	2.33	2.31	5.18
27.....	2.29	2.39	29.60	1.97	4.66	13.64	2.71	7.91	2.97	2.33	2.27	5.40
28.....	2.09	2.27	26.51	1.91	7.76	8.67	2.53	8.50	2.92	2.30	2.24	7.06
29.....	2.20	-----	20.75	1.88	8.13	4.58	2.49	6.26	2.90	2.33	2.22	13.09
30.....	2.30	-----	16.83	1.83	6.83	4.37	2.35	4.63	2.74	2.39	2.21	16.60
31.....	3.77	-----	10.67	-----	6.51	-----	2.29	3.46	-----	2.52	-----	23.76

DAILY GAGE HEIGHT, IN FEET, OF DEEP RIVER AT CUMNOCK, N. C.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1902.							1902.						
1.....	18.54	11.01	14.60	1.54	1.86	2.88	17.....	1.42	2.94	2.34	2.38	1.92	2.14
2.....	14.65	18.81	16.97	1.55	1.93	2.86	18.....	1.40	3.70	2.31	2.33	1.97	2.19
3.....	11.08	22.02	16.01	1.51	1.98	2.80	19.....	6.87	3.96	2.26	2.28	2.06	2.24
4.....	8.90	19.92	14.86	1.48	1.97	2.76	20.....	5.34	4.06	2.20	2.22	2.19	2.19
5.....	7.28	17.62	13.55	1.45	1.93	2.60	21.....	4.32	4.43	2.17	2.19	2.24	2.15
6.....	5.48	15.05	10.63	1.43	1.92	2.47	22.....	3.29	6.68	2.08	2.15	2.28	2.10
7.....	4.33	9.68	6.65	2.57	1.88	2.41	23.....	2.25	9.42	1.81	2.09	2.32	2.05
8.....	3.02	6.50	4.72	2.65	1.85	2.33	24.....	2.44	11.26	1.75	2.02	2.36	2.02
9.....	2.69	4.20	3.88	2.73	1.82	2.23	25.....	2.60	11.89	1.71	1.96	2.40	1.97
10.....	1.91	3.56	3.67	2.84	1.80	2.18	26.....	2.66	12.47	1.68	1.92	2.42	1.86
11.....	1.73	2.89	3.38	2.88	1.77	2.17	27.....	3.38	14.34	1.65	1.86	2.51	1.85
12.....	1.65	2.56	3.20	2.60	1.76	2.14	28.....	3.79	15.48	1.64	1.85	2.77	1.90
13.....	1.57	2.18	3.11	2.54	1.74	2.13	29.....	3.94	-----	1.62	1.82	2.80	-----
14.....	1.50	1.96	2.90	2.50	1.71	2.11	30.....	4.37	-----	1.62	1.81	2.83	-----
15.....	1.45	2.07	2.63	2.53	1.76	2.08	31.....	4.77	-----	1.60	-----	2.87	-----
16.....	1.46	2.42	2.65	2.46	1.86	2.06							

\*Flood.

RATING TABLE FOR DEEP RIVER AT CUMNOCK, N. C., FOR 1900, 1901 AND 1902.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
0.8	70	4.0	800	7.2	2,950	14.0	8,475
1.0	80	4.2	940	7.4	3,110	14.5	8,888
1.2	100	4.4	1,020	7.6	3,270	15.0	9,300
1.4	126	4.6	1,100	7.8	3,430	15.5	9,712
1.6	160	4.8	1,200	8.0	3,590	16.0	10,125
1.8	203	5.0	1,300	8.5	3,990	16.5	10,538
2.0	250	5.2	1,420	9.0	4,390	17.0	10,950
2.2	298	5.4	1,540	9.5	4,790	17.5	11,375
2.4	346	5.6	1,680	10.0	5,190	18.0	11,800
2.6	394	5.8	1,830	10.5	5,595	19.0	12,650
2.8	442	6.0	1,990	11.0	6,000	20.0	13,500
3.0	490	6.2	2,150	11.5	6,413	25.0	17,750
3.2	550	6.4	2,310	12.0	6,825	30.0	22,000
3.4	620	6.6	2,470	12.5	7,237	35.0	26,250
3.6	700	6.8	2,630	13.0	7,650		
3.8	780	7.0	2,790	13.5	8,063		

ESTIMATED MONTHLY DISCHARGE OF DEEP RIVER AT CUMNOCK, N. C.

(Drainage area, 1,110 square miles.)

Month.	Discharge in Second-feet.			Run-off.	
	Maximum.	Minimum.	Mean.	Second-feet per Square Mile.	Depth in Inches.
1900.					
July (18 days).....			274	0.25	0.17
August.....	394	72	138	.12	.14
September.....	3,990	116	308	.28	.31
October.....	274	80	139	.12	.14
November.....	4,550	106	368	.33	.37
December.....	5,190	126	878	.79	.91
1901.					
January.....	4,830	250	827	.75	.86
February.....	2,990	262	656	.50	.61
March.....	27,100	181	3,564	3.21	3.70
April.....	9,075	95	1,958	1.76	1.96
May.....	6,820	80	969	.89	1.03
June.....	9,918	334	2,129	1.92	2.14
July.....	13,540	322	2,500	2.25	2.60
August.....	14,135	322	4,179	3.76	4.34
September.....	10,950	298	1,806	1.63	1.82
October.....	1,125	322	434	.39	.45
November.....	334	250	286	.26	.29
December.....	16,696	274	1,824	1.64	1.89
The year.....	27,100	80	1,763	1.50	21.69
1902.					
January.....	12,268	126	1,653	1.49	1.72
February.....	15,200	238	4,597	4.14	4.31
March.....	10,908	100	2,058	1.85	2.13
April.....	466	134	286	.26	.29
May.....	454	181	276	.25	.29
June 1 to 28.....	466	214	*300	*.28	*.29

\*Partial month; station discontinued.

## ROCKFISH CREEK NEAR BRUNT, N. C.

This station was established on October 29, 1902. The gage rod is of pine, 12 feet long, well painted, and graduated to tenths and half-tenths of a foot. It is nailed on the outside of the downstream hand rail, between the two large posts, approximately over the center of the bridge. The distance from the zero of the gage to the outer rim of the pulley is 1 foot. The length of the wire from the end of the weight to the pointer is 51.80 feet. The gage reads zero when the weight touches the bottom. The observer was C. L. Nunalee, a farmer and storekeeper; his post-office address is Brunt, N. C. The course of the creek is straight here for about 500 yards, Lower Rockfish bridge crossing the creek near the middle of this straight stretch. The left side of the stream is shallow, most of the current flowing along the right bank. The banks of the creek, of sand, rise steeply on either side to a height of about 50 feet.

The station is reached by driving from Fayetteville, N. C., a distance of 7 miles. It was discontinued May 31, 1903.

## DISCHARGE MEASUREMENTS OF ROCKFISH CREEK NEAR BRUNT, N. C.

Date.	Hydrographer.	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second-foot).
1902. Sept. 6	B. S. Drane.....	121	2.63	(*)	318
Oct. 16	do.....	134	3.28	(*)	440
1903. May 27	E. W. Myers.....	151	3.72	4.15	563

\*No gage height.

## DAILY GAGE HEIGHT, IN FEET, OF ROCKFISH CREEK NEAR BRUNT, N. C.

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1902.				1902.				1902.			
1.....		3.65	5.26	12.....		3.57	3.67	23.....		3.41	6.97
2.....		3.45		13.....		3.71	4.50	24.....		3.47	7.47
3.....		3.80		14.....		3.51	7.77	25.....		3.57	5.10
4.....		3.70		15.....		3.53	7.75	26.....		3.97	3.75
5.....		3.80		16.....		3.52	5.56	27.....		4.45	3.67
6.....		2.83	9.67	17.....		3.40	3.92	28.....		4.64	3.92
7.....		4.01	7.87	18.....		3.57	4.12	29.....		4.77	3.48
8.....		4.26	4.90	19.....		3.90	4.65	30.....	3.70	3.70	3.78
9.....		4.03	4.02	20.....		3.86	3.97	31.....	3.67		4.20
10.....		4.20	3.90	21.....		3.78	4.12				
11.....		3.72	4.17	22.....		3.67	4.52				

MEAN DAILY GAGE HEIGHT, IN FEET, OF ROCKFISH CREEK NEAR BRUNT, N. C., FOR 1903.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1.....	3.83	4.07	19.17	31.28	8.90	4.20	17.....	4.22	12.70	5.00	16.50	4.17	-----
2.....	4.05	4.02	22.17	28.97	5.80	4.40	18.....	4.15	24.75	4.40	11.25	3.95	-----
3.....	5.87	4.25	17.42	18.87	4.55	4.00	19.....	3.57	26.10	4.40	8.30	4.25	-----
4.....	18.70	4.35	12.55	13.15	4.30	3.85	20.....	4.17	20.25	4.40	5.20	4.17	-----
5.....	18.32	8.35	8.57	11.25	4.45	4.20	21.....	4.97	16.95	4.65	5.55	3.90	-----
6.....	17.05	16.60	5.98	10.75	4.45	4.50	22.....	5.40	10.00	8.10	6.85	4.65	-----
7.....	12.70	12.20	5.40	8.10	4.40	-----	23.....	7.72	6.05	25.85	7.95	4.02	-----
8.....	8.47	13.30	4.50	6.55	4.25	-----	24.....	6.30	5.45	41.50	10.80	3.95	-----
9.....	5.27	26.35	4.50	5.00	4.25	-----	25.....	4.60	4.62	42.45	9.70	4.25	-----
10.....	4.27	26.72	6.55	15.00	4.45	-----	26.....	3.82	4.60	37.65	8.60	4.45	-----
11.....	4.10	17.22	6.75	12.40	4.25	-----	27.....	4.26	4.62	27.80	17.55	4.15	-----
12.....	4.50	19.20	5.95	8.65	4.35	-----	28.....	4.22	6.30	18.45	21.55	4.55	-----
13.....	6.00	25.55	12.75	6.00	4.40	-----	29.....	4.17	-----	11.92	18.05	4.10	-----
14.....	5.82	21.42	12.90	8.75	4.40	-----	30.....	4.40	-----	14.60	13.25	4.30	-----
15.....	4.72	16.80	9.50	20.00	4.35	-----	31.....	4.40	-----	30.02	-----	4.75	-----
16.....	3.95	11.45	6.65	16.80	4.35	-----							

## PEE DEE (OR YADKIN) RIVER DRAINAGE BASIN.

## DESCRIPTION OF BASIN.

Yadkin River, or the Pee Dee, as it is called below the junction with the Uwharie, rises on the eastern slope of the Blue Ridge, in Caldwell and Watauga counties, N. C., and flows at first southeastward, then turns abruptly to the northeast, and after flowing in this direction for about 60 miles again bends abruptly and flows southward and southeastward across North Carolina and South Carolina, emptying into Winyah Bay at Georgetown, S. C. The total length of the stream from source to mouth, in its general direction, is from 275 to 300 miles, but with all the windings it is probably 400 miles or more.

The Pee Dee drains a total area of about 17,000 square miles, of which 9,700 square miles are in North Carolina and 7,300 in South Carolina. It crosses the fall line near Cheraw, S. C., in a series of rapids extending over a number of miles, with no very great fall at any one place or in any short distance.

The upper part of the drainage basin is rough and mountainous and is largely forest covered, and throughout this part of its course the flow of the stream is more constant than would be expected. Below the great bend, where the river turns to the south, the valley averages about 50 miles in width. At many points the river is bordered by wide expanses of bottom lands, at times subject to overflow, which are fertile and very productive. At other places the stream is confined between bold and abrupt banks, and in one place it flows for several miles in a narrow channel, parts of which are only 60 feet wide, in a deep ravine between the flanking hills, forming the noted "Narrows." Above the great bend the valley is from 15 to 20 miles wide, and the elevations of the divides which separate the basin of the Yadkin from adjacent drainage basins are much higher, so that the tributary streams have a large fall.

In North Carolina both the main stream and many of its tributaries can be made to furnish power in large amount at a number of places, and for this reason they are among the most important power streams in the Southern States.

The average rainfall over the part of the basin in North Carolina is probably between 48 and 51 inches, approximating the smaller figure over the lower portions, and possibly exceeding the larger over the higher and more mountainous portions, the precipitation increasing toward the head of the stream. The total amount is rather evenly distributed among the seasons.

The highest flood ever known at Wilkesboro, it is stated, occurred in March, 1899, the stream at this place rising 28 feet above low water. The greatest flood recorded at the gaging station at Salisbury occurred in December, 1901, the stream reaching an extreme height on the gage of 19.7 feet and having a probable discharge of about 130,000 second-feet, or about 38 second-feet per square mile. The flood of March, 1899, produced a rise of about 1 foot less than this flood of December, 1901. The most destructive flood ever experienced on the river occurred in

May, 1901, but the recorded gage height at the Salisbury station was less for this flood than for either of the others mentioned, and the general testimony of those living along the banks is to the same effect.

The minimum recorded flow at the Salisbury station occurred in September, October, and November, 1897, when the basin experienced the most severe drought in its history. The flow fell to 900 second-feet several times during this period, *i. e.*, the basin above the station was discharging at an average rate of 0.26 second-foot per square mile. The maximum flow is thus about 144 times the minimum.

#### MEASUREMENTS OF STREAM FLOW.

##### YADKIN RIVER AT NORWOOD, N. C.

This station was established by E. W. Myers, September 1, 1896. It is at Blalocks Ferry, 1 mile above Richland Creek and about 2 miles from Norwood, North Carolina. The gage is a vertical rod divided into feet and tenths, and is spiked and braced to an overhanging tree near the ferry. The rod is referred to a bench mark consisting of a large nail driven into the root of a birch tree about 50 feet northwest of the rod. The zero of the gage rod is 5.93 feet below the bench mark. The river here is broad and shallow with smooth bottom of sand and gravel, giving a good section for discharge measurements, which are taken from the ferryboat. The channel is straight and free from all obstructions. The current is swift and the depth of the water uniform, except at a point about 100 feet from the right bank, where the water is deep and very sluggish. The banks are low, and at the time of highest flood are overflowed for a distance of half a mile. The station was abandoned in January, 1900.

##### DISCHARGE MEASUREMENTS OF YADKIN RIVER AT NORWOOD, N. C.

Date.	Hydrographer.	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second-feet).
1896.					
Sept. 1	E. W. Myers	1,859	0.82	1.00	1,537
Sept. 15	do.	2,211	0.92	1.34	2,036
1897.					
Feb. 12	E. W. Myers	3,779	2.54	3.22	9,607
Mar. 21	do.	4,517	2.59	3.80	11,710
Aug. 4	do.	2,544	1.33	1.65	3,392
Oct. 6	do.	1,821	0.82	1.00	1,508
Oct. 25	A. P. Davis	2,152	1.26	1.48	2,715
1898.					
Jan. 16	E. W. Myers	2,474	1.22	1.63	3,041
May 1	do.	6,465	3.84	5.75	24,825
1899.					
April 9	E. W. Myers			3.40	10,581
June 8	do.			1.95	4,474
June 9	do.			1.95	4,474
Oct. 6	do.			1.35	2,629
Oct. 6	do.			1.33	2,619
Dec. 15	do.			2.23	6,299

DAILY GAGE HEIGHT, IN FEET, OF YADKIN RIVER AT NORWOOD, N. C., FOR 1896.

Day.	Sept.	Oct.	Nov.	Dec.	Day.	Sept.	Oct.	Nov.	Dec.	Day.	Sept.	Oct.	Nov.	Dec.
1....	1.00	7.40	1.30	1.50	12....	1.20	1.20	1.70	1.70	23....	1.20	1.20	1.40	1.80
2....	1.00	3.40	1.30	2.70	13....	1.20	1.20	2.20	1.30	24....	1.30	1.20	1.40	1.80
3....	1.00	2.30	1.30	2.70	14....	1.20	1.20	1.30	1.60	25....	1.20	1.30	1.40	1.70
4....	.90	1.80	1.40	2.30	15....	1.30	1.30	1.90	1.90	26....	1.20	1.30	1.40	1.70
5....	.90	1.60	3.10	2.30	16....	1.20	1.30	1.70	2.50	27....	1.10	1.30	1.40	1.70
6....	2.50	1.50	6.00	2.20	17....	1.30	1.20	1.60	3.80	28....	1.00	1.30	1.40	1.70
7....	3.30	1.40	3.40	2.30	18....	1.30	1.20	1.50	2.90	29....	1.20	1.20	1.50	1.60
8....	2.10	1.40	2.50	2.40	19....	1.20	1.20	1.50	2.30	30....	1.30	1.20	1.70	1.60
9....	1.65	1.30	2.20	2.20	20....	1.20	1.10	1.50	2.10	31....	-----	1.20	-----	1.70
10....	1.45	1.30	2.10	2.10	21....	1.10	1.10	1.50	2.00					
11....	1.30	1.20	1.90	1.90	22....	1.10	1.10	1.50	1.90					

DAILY GAGE HEIGHT, IN FEET, OF YADKIN RIVER AT NORWOOD, N. C., FOR 1897.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	1.70	1.90	2.50	2.40	2.40	2.10	1.70	1.70	1.30	1.00	1.60	2.20
2.....	1.70	2.70	2.30	2.30	3.80	2.10	1.60	1.50	1.50	1.00	1.70	2.00
3.....	1.60	3.30	2.30	2.40	4.30	1.90	1.60	1.60	1.30	1.10	1.80	1.80
4.....	1.60	3.50	2.20	2.60	2.90	1.80	1.90	1.60	1.30	1.10	1.80	1.70
5.....	1.50	2.60	2.20	6.70	2.60	1.90	1.70	1.70	1.20	1.00	1.70	2.00
6.....	1.50	5.50	2.60	8.50	2.30	2.40	1.40	1.50	1.20	1.00	1.50	2.00
7.....	1.70	8.20	6.90	6.00	2.20	2.30	1.90	2.10	1.20	1.00	1.50	2.00
8.....	1.70	9.20	6.80	3.80	2.10	2.40	2.10	2.50	1.10	1.00	1.40	1.80
9.....	1.60	4.30	4.80	4.20	2.10	4.30	1.80	2.20	1.20	1.10	1.40	1.80
10.....	1.50	3.40	4.30	4.20	2.10	3.40	1.70	2.00	1.20	1.00	1.30	1.70
11.....	1.50	2.60	5.20	3.50	2.30	3.40	1.90	1.70	1.20	1.00	1.30	1.70
12.....	1.50	3.10	5.40	2.90	2.50	2.50	1.80	1.60	1.10	1.10	1.40	1.40
13.....	1.50	3.90	4.90	2.70	2.90	2.30	3.10	1.50	1.10	3.70	1.30	1.40
14.....	1.60	3.40	5.40	2.50	3.50	2.20	2.80	1.50	1.00	3.80	1.30	1.30
15.....	1.60	2.80	6.50	2.50	3.60	2.10	2.50	1.40	1.00	2.20	1.30	1.80
16.....	1.70	2.60	5.00	2.40	2.80	2.10	1.70	1.40	.90	1.90	1.30	1.90
17.....	1.70	2.70	4.90	2.70	2.40	2.10	1.60	1.50	.80	1.60	1.20	2.00
18.....	2.00	2.40	3.90	2.50	2.30	1.80	2.10	2.30	.90	1.30	1.40	1.80
19.....	2.30	2.30	3.50	2.30	2.10	1.90	1.80	2.00	1.00	1.20	1.30	1.70
20.....	2.50	2.10	3.60	2.20	2.10	1.90	2.50	1.70	1.10	1.20	1.30	1.70
21.....	4.50	3.70	3.80	2.30	2.00	1.80	4.50	1.50	1.20	1.40	1.30	1.60
22.....	4.40	3.40	3.30	2.20	2.00	2.10	3.50	2.40	1.10	2.30	1.20	1.80
23.....	3.50	4.30	3.00	2.10	2.10	2.10	2.70	1.50	1.10	1.90	1.30	1.40
24.....	2.50	7.70	2.80	2.20	2.00	2.00	2.40	2.00	1.00	1.60	1.20	1.70
25.....	2.30	6.20	2.60	2.10	2.20	1.90	2.00	1.90	1.20	1.50	1.20	1.70
26.....	2.10	3.50	2.60	2.10	3.10	1.80	2.10	1.80	1.50	1.50	1.20	2.00
27.....	2.00	2.90	2.50	2.30	2.20	1.60	2.40	1.90	1.30	1.40	1.50	2.40
28.....	1.90	2.50	2.50	2.20	2.00	1.60	3.50	1.70	1.20	1.40	3.00	2.70
29.....	1.80	-----	2.30	2.10	1.90	1.90	2.30	1.60	1.10	1.40	2.50	2.40
30.....	1.80	-----	2.30	2.30	2.00	1.70	1.90	1.40	1.10	1.30	2.40	2.00
31.....	-----	-----	2.40	-----	2.00	-----	1.70	1.40	-----	1.40	-----	1.90



DAILY GAGE HEIGHT, IN FEET, OF YADKIN RIVER AT NORWOOD, N. C., FOR 1895 AND 1899.

1895.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	1.40	1.40	1.50	4.20	1.40	1.70	1.20	1.90	2.40	1.90	1.90	2.10
2.....	1.40	1.90	1.60	3.40	1.70	1.60	1.20	1.70	2.60	1.70	1.70	2.20
3.....	1.40	1.70	1.70	2.50	1.60	1.50	1.60	1.90	2.50	1.60	2.10	2.20
4.....	1.70	1.50	2.30	2.40	1.60	1.30	1.60	1.70	1.90	1.90	2.20	3.10
5.....	1.50	1.60	2.50	3.60	1.50	1.30	90	1.60	2.20	1.90	2.30	4.70
6.....	1.60	1.70	2.40	4.50	1.50	1.30	1.30	1.50	4.10	5.60	2.90	4.50
7.....	1.70	1.60	2.10	3.40	1.60	1.20	2.60	2.60	3.60	4.60	2.70	3.60
8.....	1.70	1.60	1.90	2.60	2.30	1.20	1.70	1.70	2.70	2.90	2.50	3.40
9.....	1.60	1.50	1.90	2.30	2.00	1.30	1.40	1.60	2.60	2.40	2.10	3.90
10.....	1.50	1.50	1.90	2.20	1.90	1.20	1.40	1.50	2.40	2.30	1.90	2.90
11.....	1.70	1.60	1.60	2.10	1.60	1.30	1.50	1.60	1.90	2.10	1.80	2.20
12.....	1.70	1.60	1.60	2.00	1.60	1.30	2.10	1.90	1.70	1.90	1.70	2.10
13.....	1.60	1.60	1.50	1.90	1.70	1.60	1.70	3.60	1.20	1.80	1.90	1.90
14.....	1.70	1.70	1.70	1.90	1.90	1.30	1.60	1.50	1.50	1.70	2.10	1.90
15.....	1.70	1.90	2.50	2.00	1.70	1.40	2.10	3.60	1.50	1.80	2.30	1.80
16.....	1.60	1.70	2.60	2.20	1.60	1.30	1.10	2.50	1.40	1.90	3.20	1.70
17.....	1.60	1.70	2.70	2.00	1.50	1.40	2.10	2.60	1.20	1.70	2.70	1.80
18.....	1.60	1.60	2.00	1.90	1.40	2.30	1.90	2.60	1.50	1.80	2.90	1.90
19.....	1.50	1.70	1.90	1.80	1.40	1.60	1.20	1.90	1.40	1.90	3.10	2.10
20.....	1.50	1.40	2.30	1.80	1.50	2.20	1.40	1.70	1.30	2.70	3.20	2.20
21.....	1.70	1.90	2.20	1.70	1.40	2.10	1.30	4.00	1.30	2.60	2.90	2.30
22.....	2.60	1.90	1.90	1.70	1.40	1.60	1.20	3.20	1.20	2.90	2.40	2.50
23.....	2.20	1.80	1.70	1.80	2.60	1.60	1.70	2.20	1.50	5.40	2.30	2.90
24.....	2.00	1.70	1.80	1.90	4.80	1.50	2.20	2.10	7.00	3.80	2.40	3.90
25.....	2.30	1.60	1.90	2.30	3.80	1.40	2.90	1.90	11.00	2.70	2.20	3.70
26.....	3.60	1.60	2.10	3.40	2.60	1.20	2.20	1.30	7.00	2.50	2.30	3.90
27.....	3.70	1.60	2.00	2.30	2.30	1.10	2.90	1.70	3.70	2.40	2.10	3.70
28.....	3.00	1.50	1.70	2.10	2.00	1.40	2.00	2.50	2.40	2.30	1.90	2.30
29.....	2.40		1.80	1.80	1.80	1.40	2.30	3.00	2.20	2.20	1.80	2.10
30.....	2.10		5.70	1.80	1.60	1.30	3.00	3.40	2.00	2.70	1.90	1.90
31.....	2.00		6.10		1.80		2.30	2.70		2.50		1.80
1899.												
1.....	2.80	3.00	4.50		2.60	2.10	1.90	2.70	1.50	1.30	1.70	1.20
2.....	4.30	2.90	3.70		2.50	2.20	1.80	2.20	1.70	1.20	1.90	1.20
3.....	3.30	2.50	4.30		2.70	2.50	1.70	2.70	1.20	1.20	1.80	1.50
4.....	2.30	2.70	6.70		2.60	2.10	1.70	1.70	1.80	1.20	1.70	1.50
5.....	2.50	8.00	7.50		2.50	2.10	3.00	1.20	1.80	1.10	1.90	1.50
6.....	2.40	10.50	6.10		2.40	2.00	3.00	1.60	1.70	1.30	1.80	1.40
7.....	7.80	10.20	4.10		2.60	2.00	2.20	1.50	1.50	1.40	1.70	1.40
8.....	9.00	9.60	4.00		3.20	1.90	2.00	1.50	1.40	2.00	1.70	1.30
9.....	7.00	7.40	3.80	3.40	3.50	2.00	2.00	1.80	1.80	2.20	1.80	1.30
10.....	3.60	4.60	3.40	3.00	3.00	2.10	1.90	1.70	1.70	2.40	1.40	1.40
11.....	3.10	3.20	2.00	2.90	3.00	3.40	1.90	1.60	1.90	2.10	1.40	1.40
12.....	3.00	3.10	2.10	2.80	2.80	3.50	1.60	1.50	1.70	1.70	1.40	2.40
13.....	2.90	3.00	2.40	2.80	4.50	3.40	1.60	1.80	1.50	1.40	1.40	3.10
14.....	4.20	2.40	3.10	2.70	4.00	3.80	1.60	1.70	1.60	1.30	1.40	3.10
15.....	4.50	2.30	8.10	2.70	3.50	3.00	1.50	1.60	1.50	1.50	1.40	2.40
16.....	3.90	5.60	10.40	3.40	2.80	2.50	1.50	1.50	1.40	1.50	1.40	2.10
17.....	3.80	5.80	10.30	3.00	2.50	2.20	1.50	1.50	1.20	1.50	1.30	1.80
18.....	3.30	6.90	8.80	2.80	2.40	2.10	1.60	1.40	1.50	1.40	1.30	1.30
19.....	3.10	5.60	(*)	2.80	2.20	2.00	1.80	1.40	1.30	1.40	1.20	1.20
20.....	2.80	5.00		2.70	2.50	2.00	1.50	1.30	1.20	1.40	1.30	1.20
21.....	2.60	4.20		2.70	2.30	1.90	1.50	1.30	3.00	1.40	1.40	1.50
22.....	2.50	3.60		2.50	2.20	1.90	1.40	1.40	2.80	1.30	1.30	1.50
23.....	2.40	3.60		2.50	2.40	1.90	1.40	1.30	1.70	1.30	1.40	1.50
24.....	2.30	3.40		2.40	2.60	1.80	1.50	1.20	1.70	1.20	1.40	1.80
25.....	2.50	2.90		2.30	2.50	1.70	1.70	1.20	1.40	1.30	1.30	2.10
26.....	2.40	3.80		2.80	2.30	1.70	1.60	1.20	1.30	1.20	1.30	2.10
27.....	2.40	5.90		3.50	2.20	2.40	4.00	1.20	1.30	1.20	1.30	1.70
28.....	2.30	7.60		3.10	2.10	2.30	2.00	1.20	1.40	1.20	1.50	1.80
29.....	2.30			2.80	2.10	2.10	2.50	1.60	1.30	1.20	1.70	1.20
30.....	2.20			2.70	2.20	2.00	2.30	1.80	1.20	1.20	1.70	1.20
31.....	2.70				2.20		2.10	2.00		1.70		

\*No readings March 19 to April 8; gage washed out by flood.

RATING TABLE FOR YADKIN RIVER AT NORWOOD, N. C., FOR 1896.

Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).
0.70	1,300	1.60	3,100	2.50	6,565	3.40	10,100
0.80	1,370	1.70	3,485	2.60	6,950	3.50	10,500
0.90	1,450	1.80	3,870	2.70	7,335	3.60	10,900
1.00	1,540	1.90	4,255	2.80	7,720	3.70	11,300
1.10	1,640	2.00	4,640	2.90	8,110	3.80	11,700
1.20	1,830	2.10	5,025	3.00	8,500	3.90	12,100
1.30	2,080	2.20	5,410	3.10	8,900	4.00	12,500
1.40	2,380	2.30	5,795	3.20	9,300		
1.50	2,720	2.40	6,180	3.30	9,700		

RATING TABLE FOR YADKIN RIVER AT NORWOOD, N. C., FOR 1897 AND 1898.

0.7	1,250	2.6	6,960	4.8	18,000	7.0	34,080
0.8	1,310	2.8	7,720	5.0	19,460	7.2	35,520
0.9	1,380	3.0	8,480	5.2	20,920	7.4	36,980
1.0	1,480	3.2	9,240	5.4	22,380	7.6	38,440
1.2	1,820	3.4	10,000	5.6	23,840	7.8	39,900
1.4	2,400	3.6	10,860	5.8	25,300	8.0	41,360
1.6	3,160	3.8	11,800	6.0	26,760	8.2	42,820
1.8	3,920	4.0	12,800	6.2	28,220	8.4	44,280
2.0	4,680	4.2	13,800	6.4	29,680	8.6	45,740
2.2	5,440	4.4	15,100	6.6	31,140	8.8	47,200
2.4	6,200	4.6	16,540	6.8	32,600	9.0	48,660

RATING TABLE FOR YADKIN RIVER AT NORWOOD, N. C., FOR 1899.

1.0	1,500	2.8	7,920	4.6	17,820	8.5	46,300
1.2	2,080	3.0	8,760	4.8	19,060	9.0	51,000
1.4	2,670	3.2	9,630	5.0	20,300	9.5	56,250
1.6	3,270	3.4	10,600	5.5	23,510	10.0	61,500
1.8	3,900	3.6	11,780	6.0	26,800	10.5	66,750
2.0	4,600	3.8	12,980	6.5	30,300	11.0	72,000
2.2	5,400	4.0	14,180	7.0	33,800		
2.4	6,240	4.2	15,380	7.5	37,800		
2.6	7,080	4.4	16,580	8.0	41,800		

ESTIMATED MONTHLY DISCHARGE OF YADKIN RIVER AT NORWOOD, N. C.  
[Drainage area, 4,614 square miles.]

Month.	Discharge in Second-feet.			Total in Acre-feet.	Run-off.	
	Maxi- mum.	Mini- mum.	Mean.		Depth in Inches.	Second- feet per Square Mile.
1896.						
September.....	9,700	1,450	2,409	143,344	0.58	0.52
October.....	26,100	1,640	3,225	198,297	0.81	0.70
November.....	20,500	2,080	4,176	248,480	1.01	0.91
December.....	11,700	2,060	4,885	300,300	1.22	1.06
1897.						
January.....	15,810	2,780	4,880	300,060	1.22	1.06
February.....	50,120	4,300	13,760	764,190	3.10	2.98
March.....	33,330	5,440	13,017	800,385	3.25	2.82
April.....	45,010	5,060	9,755	580,465	2.35	2.11
May.....	14,400	4,300	6,388	392,785	1.59	1.38
June.....	14,400	3,160	5,397	321,145	1.31	1.17
July.....	15,810	2,400	5,495	337,875	1.37	1.19
August.....	6,560	2,400	3,712	228,240	0.93	0.81
September.....	2,780	1,310	1,774	105,560	0.43	0.38
October.....	26,900	1,480	2,999	184,400	0.75	0.65
November.....	8,480	1,820	2,973	176,910	0.71	0.64
December.....	7,340	2,080	4,171	256,465	1.04	0.90
The year.....	50,120	1,310	6,193	4,448,480	18.05	1.34
1898.						
January.....	11,330	2,780	4,506	277,063	1.13	0.98
February.....	4,300	2,780	3,445	191,325	0.78	0.75
March.....	27,490	2,780	5,972	367,204	1.49	1.29
April.....	15,820	3,540	6,128	364,641	1.48	1.33
May.....	18,000	2,400	4,460	274,788	1.12	0.97
June.....	5,820	1,650	2,755	163,934	0.67	0.60
July.....	8,480	1,360	3,928	241,523	0.98	0.85
August.....	12,800	2,110	5,353	329,143	1.34	1.16
September.....	63,260	1,820	8,887	528,813	2.15	1.93
October.....	23,840	3,160	7,045	433,180	1.76	1.53
November.....	9,240	3,540	5,858	348,575	1.41	1.27
December.....	17,270	3,540	7,461	458,750	1.87	1.62
The year.....	63,260	1,380	5,484	3,978,948	16.18	1.19
1899.						
January.....	51,000	5,400	12,026	739,450	3.00	2.61
February.....	66,750	5,820	22,070	1,225,706	4.97	4.78
March 1 to 18*.....		4,600	24,572	1,510,873	6.14	5.33
April 9 to 30*.....		5,820	8,219	489,064	1.99	1.78
May.....	17,200	5,000	7,523	462,571	1.88	1.63
June.....	12,980	3,570	5,865	348,992	1.42	1.27
July.....	14,180	2,670	4,489	276,018	1.12	0.97
August.....	7,500	2,060	3,321	204,200	0.83	0.72
September.....	8,760	2,080	3,355	199,636	0.81	0.73
October.....	6,240	1,790	2,840	174,625	0.71	0.62
November.....	4,250	2,080	2,999	178,453	0.72	0.65
December.....	9,180	2,060	3,739	229,902	0.93	0.81

\* Approximate.

## DISCHARGE MEASUREMENTS OF YADKIN RIVER NEAR SALISBURY, N. C.—Continued.

Date.	Hydrographer.	Gage Height (Feet).	Discharge (Second-feet).
1899.			
Feb. 9	E. W. Myers	6.60	14,781
Mar. 20	do.	18.80	115,085
Apr. 14	do.	3.75	8,795
June 8	do.	2.30	4,264
June 9	do.	2.38	4,264
Oct. 4	do.	1.70	1,847
Nov. 24	do.	1.79	1,957
Dec. 14	do.	3.00	5,952
1900.			
Feb. 13	E. W. Myers	7.43	26,682
Apr. 14	do.	2.50	3,962
May 19	do.	2.45	4,042
May 25	do.	3.82	7,930
Aug. 18	do.	1.95	1,447
Nov. 9	do.	2.30	2,095
Dec. 17	do.	2.45	3,025
1901.			
Apr. 3	E. W. Myers	10.50	38,550
Apr. 6	do.	4.72	12,160
Apr. 24	do.	4.48	9,611
July 27	do.	2.80	4,509
Nov. 14	do.	2.60	3,288
1902.			
May 12	J. S. Henderson	2.75	4,139
June 13	do.	2.56	3,467
July 18	B. S. Drane	2.20	2,788
Aug. 14	do.	3.30	7,301
Aug. 29	do.	2.07	2,411
Sept. 16	do.	2.00	2,119
Oct. 18	do.	2.05	2,277
Dec. 3	do.	6.52	16,894
1903.			
Feb. 14	E. W. Myers	4.20	9,992
Feb. 17	do.	10.52	47,960
Mar. 24	E. C. Murphy	15.60	70,362
Mar. 26	B. S. Drane	5.56	15,034
Apr. 15	E. C. Murphy	7.35	24,419
Apr. 16	E. W. Myers	5.20	15,151
Apr. 16	E. C. Murphy	5.22	12,287
Apr. 16	do.	4.95	11,787
June 20	E. W. Myers	2.00	4,286
Aug. 22	B. S. Drane	2.35	4,490
Aug. 22	do.	2.35	3,453
Oct. 27	do.	1.95	2,197
Nov. 14	do.	1.89	2,416
Dec. 17	do.	1.75	2,053

## DISCHARGE MEASUREMENTS OF YADKIN RIVER NEAR SALISBURY, N. C.—Continued.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1904.						
Feb. 16	B. S. Drane.....	523	2,061	1.38	2.06	2,843
Mar. 17	do.....	522	2,132	1.44	2.19	3,075
Apr. 25	do.....	523	2,090	1.22	2.08	2,543
July 22	do.....	564	1,332	1.96	1.94	2,611
July 22	do.....	528	2,128	1.38	2.22	2,942
Sept. 7	do.....	524	2,184	1.78	2.52	3,892
Sept. 28	do.....	520	1,779	.82	1.44	1,465
Sept. 28	do.....	562	1,120	1.36	1.42	1,526
Dec. 17	do.....	522	1,942	1.08	1.82	2,090
1905.						
Jan. 7	B. S. Drane.....	539	3,108	3.28	4.50	10,210
Jan. 13	J. M. Giles.....	505	4,083	4.16	6.20	16,990
Jan. 13	do.....	575	3,660	4.39	6.05	16,070
Apr. 20	B. S. Drane.....	536	1,579	2.15	2.34	3,390
Apr. 29	do.....	468	2,128	1.34	2.22	2,846
June 24	do.....	468	2,194	1.44	2.22	3,170
Aug. 19	do.....	470	2,338	1.94	2.74	4,530
Sept. 21	do.....	432	1,959	1.15	1.85	2,260
1906.						
Mar. 3	E. C. Murphy.....	462	2,220	-----	2.58	3,430
June 22	W. E. Hall.....	475	2,380	-----	3.10	5,050
Sept. 11	do.....	474	2,440	-----	3.04	4,970
1907.						
Mar. 28	W. E. Hall.....	472	2,192	-----	2.74	3,547

## DAILY GAGE HEIGHT OF YADKIN RIVER NEAR SALISBURY, N. C., FOR 1895.

Day.	Sept.	Oct.	Nov.	Dec.
1.....	-----	-----	1.60	1.70
2.....	-----	-----	1.80	1.70
3.....	-----	-----	1.80	1.70
4.....	-----	-----	1.60	1.70
5.....	-----	1.40	1.50	1.70
6.....	-----	1.40	1.50	1.60
7.....	-----	1.40	1.50	1.60
8.....	-----	1.40	1.50	1.60
9.....	-----	1.40	1.50	1.60
10.....	-----	1.50	1.90	1.60
11.....	-----	1.50	2.20	1.60
12.....	-----	1.40	2.20	1.70
13.....	-----	1.40	1.90	1.70
14.....	-----	1.50	1.80	1.70
15.....	-----	1.50	1.60	1.60
16.....	-----	1.50	1.60	1.60
17.....	-----	1.50	1.60	1.60
18.....	-----	1.50	1.60	1.60
19.....	-----	1.40	1.60	1.60
20.....	-----	1.40	1.60	1.60
21.....	-----	1.40	1.60	2.10
22.....	-----	1.40	1.60	2.30
23.....	-----	1.40	1.60	1.90
24.....	1.40	1.40	1.60	2.10
25.....	1.40	1.40	1.60	2.90
26.....	1.40	1.40	1.60	2.20
27.....	1.40	1.40	1.80	1.90
28.....	1.40	1.40	2.30	2.10
29.....	1.40	1.40	1.90	2.40
30.....	-----	1.40	1.70	2.30
31.....	-----	1.50	-----	4.10

## WATER-POWERS OF NORTH CAROLINA.

DAILY GAGE HEIGHT, IN FEET, OF YADKIN RIVER NEAR SALISBURY, N. C., FOR 1896 AND 1897.

1896.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	3.60	2.00	2.50	2.50	1.80	1.50	1.80	2.00	1.40	8.40	1.68	6 70
2.....	3.00	2.00	2.20	8.00	1.80	1.50	1.80	1.90	1.40	3.70	1.70	4.10
3.....	2.40	5.70	2.70	7.30	2.10	1.80	1.60	1.90	1.40	2.20	1.72	3 70
4.....	2.20	6.70	1.80	4.00	2.90	3.90	2.60	1.70	1.40	2.50	-----	2.80
5.....	1.80	4.90	2.00	3.10	2.30	3.70	2.70	1.70	1.50	1.80	5.80	2.50
6.....	1.00	5.30	2.00	2.60	2.20	2.50	2.80	1.60	4.50	1.70	6.78	2.55
7.....	1.60	7.00	1.90	2.50	2.00	2.20	4.50	1.60	2.70	1.70	3.90	2.53
8.....	1.90	5.00	1.90	2.40	1.90	2.00	4.90	1.60	2.20	1.60	3.50	2.52
9.....	3.70	5.00	1.90	2.20	1.90	2.00	12.90	1.50	1.90	1.60	2.50	2.30
10.....	3.60	4.70	1.90	2.20	1.90	1.90	15.00	2.00	1.60	1.60	2.30	2.27
11.....	3.40	3.60	2.00	2.20	1.90	2.20	10.00	2.00	1.50	1.60	2.20	2 26
12.....	2.60	3.00	2.20	2.10	1.90	1.80	9.80	1.90	1.50	1.62	2.10	2.26
13.....	2.10	2.70	2.40	2.00	1.80	1.80	7.90	1.80	2.00	1.66	2.15	2.25
14.....	1.70	3.30	2.10	2.00	1.70	1.80	4.90	1.60	1.75	1.64	2.00	2.23
15.....	1.70	3.10	2.00	2.00	1.70	1.70	4.00	1.60	1.60	1.70	2.00	2.30
16.....	1.70	2.80	1.80	2.00	1.70	1.60	3.70	2.50	1.50	1.70	2.00	5 00
17.....	1.90	2.50	2.00	2.00	1.70	1.60	2.80	2.20	1.60	1.68	1.98	3.55
18.....	2.20	2.30	2.00	2.00	1.70	1.80	2.40	2.90	1.60	1.65	1.95	3.40
19.....	2.10	2.20	1.90	2.10	1.60	1.80	2.40	2.70	1.60	1.50	1.92	2.95
20.....	2.00	2.10	2.20	2.00	1.60	1.80	2.20	2.50	1.50	1.50	1.90	3.90
21.....	1.90	2.00	2.60	2.00	1.50	1.70	2.20	1.90	1.50	1.50	1.90	3 70
22.....	1.80	1.80	2.20	2.00	1.80	1.70	2.30	1.90	1.50	1.48	1.90	3.33
23.....	2.50	2.10	2.10	2.00	1.80	1.60	2.50	1.50	1.70	1.48	1.89	2.30
24.....	4.30	2.20	2.10	1.90	1.80	1.80	2.30	1.50	1.60	1.60	1.88	2.20
25.....	3.70	2.10	2.50	1.90	1.70	2.10	2.20	1.50	1.50	1.76	1.88	2.13
26.....	3.20	2.10	2.40	2.00	2.00	2.80	2.00	1.60	1.50	1.67	1.88	2.12
27.....	2.60	2.10	2.20	2.00	2.00	2.60	1.90	1.60	1.46	1.65	1.90	2.10
28.....	2.40	2.20	2.10	1.90	1.80	2.20	1.90	1.50	1.45	1.65	1.90	2.00
29.....	2.20	2.30	2.00	1.90	1.70	2.10	2.20	1.50	1.50	1.65	2.70	2.00
30.....	2.10	-----	2.10	1.90	1.70	1.90	1.90	1.50	8.60	1.65	6.30	2.08
31.....	2.00	-----	2.60	-----	1.60	-----	1.90	1.40	-----	1.68	-----	2.07
1897.												
1.....	2.05	2.50	2.90	2.80	3.50	2.80	2.00	1.90	2.10	1.30	2.10	2.00
2.....	2.04	2.90	2.80	2.70	4.50	2.70	2.00	1.70	2.10	1.40	2.20	2.00
3.....	2.02	5.80	2.70	2.80	4.00	2.20	1.90	1.90	2.00	1.30	2.10	2.10
4.....	2.01	4.30	2.70	3.00	3.20	2.20	2.00	2.10	1.90	1.30	2.30	2.00
5.....	2.00	3.00	2.60	5.50	2.70	2.60	2.00	2.00	1.90	1.20	2.10	2.60
6.....	2.00	3.50	2.50	10.20	2.50	2.40	2.10	1.90	1.80	1.40	2.10	2.80
7.....	2.00	11.10	8.30	6.50	2.40	2.50	2.00	2.50	1.80	1.40	2.10	2.70
8.....	2.00	7.57	7.50	4.20	2.40	6.80	2.60	1.90	1.80	1.40	2.00	1.80
9.....	2.00	5.20	5.60	4.30	2.40	5.00	2.90	1.90	1.60	1.40	1.80	1.90
10.....	2.00	3.75	5.90	4.00	2.30	5.30	2.40	1.90	1.60	1.40	1.80	1.80
11.....	2.00	3.00	6.10	4.00	2.40	5.00	2.40	1.90	1.60	1.40	1.70	1.80
12.....	2.00	3.70	5.10	3.20	2.40	4.10	2.00	1.80	1.50	2.00	1.70	1.80
13.....	2.00	4.20	5.10	3.00	3.00	2.80	4.50	1.80	1.50	8.50	1.70	1.80
14.....	2.00	3.70	5.10	3.00	5.20	2.80	3.00	1.80	1.50	4.10	1.60	1.80
15.....	2.08	3.20	6.40	3.10	3.90	2.60	2.40	1.70	1.40	2.30	1.60	2.20
16.....	2.10	2.79	5.30	3.20	3.10	2.40	2.10	1.70	1.40	2.30	1.60	2.50
17.....	2.12	2.90	5.20	2.80	2.50	2.20	1.90	2.00	1.30	1.90	1.50	2.20
18.....	2.50	2.60	4.40	2.80	2.50	2.20	2.40	2.80	1.30	1.80	1.50	2.10
19.....	2.52	2.60	4.00	2.90	2.50	2.20	3.40	2.30	1.30	1.80	1.50	1.80
20.....	2.55	-----	4.40	2.80	2.40	2.70	3.70	1.90	1.20	2.10	1.40	1.80
21.....	3.40	-----	4.30	2.70	2.40	2.30	3.00	1.60	1.30	4.10	1.40	2.00
22.....	4.60	5.60	3.90	2.60	2.20	2.10	3.20	1.80	1.40	3.00	1.20	2.10
23.....	3.65	5.00	3.40	2.60	2.10	2.10	2.10	2.30	1.50	2.10	1.40	2.00
24.....	2.85	9.50	3.00	2.40	2.20	1.90	2.30	2.20	1.80	1.90	1.40	2.00
25.....	2.58	6.70	3.00	2.30	3.60	1.90	3.00	2.10	1.50	1.90	1.40	2.00
26.....	2.45	4.70	2.90	2.40	3.00	1.80	2.10	2.10	1.50	1.90	1.20	1.90
27.....	2.30	3.50	2.80	2.40	2.70	1.90	3.40	2.00	1.50	1.90	3.10	2.00
28.....	2.22	3.00	3.00	2.40	2.30	1.90	3.30	1.90	1.30	1.80	3.20	2.00
29.....	1.90	-----	2.60	2.40	2.40	2.00	2.50	2.20	1.30	1.80	3.00	2.00
30.....	1.88	-----	2.70	2.50	2.40	2.00	2.10	2.20	1.30	1.70	2.70	1.90
31.....	2.13	-----	2.80	-----	2.30	-----	1.90	2.10	-----	1.90	-----	1.90

DAILY GAGE HEIGHT, IN FEET, OF YADKIN RIVER NEAR SALISBURY, N. C., FOR 1898 AND 1899.

1898.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1	2.00	2.00	1.70	4.70	1.80	1.80	1.70	1.80	2.30	1.80	2.40	1.70
2	2.00	2.00	1.70	3.00	1.80	1.80	1.70	1.70	2.00	1.80	2.40	1.70
3	2.00	2.00	1.80	2.80	1.80	1.70	1.50	2.00	1.80	1.90	2.00	1.70
4	2.00	1.90	2.20	2.30	1.80	1.70	1.30	3.00	2.00	2.20	1.80	2.30
5	2.00	1.80	2.10	2.70	2.60	1.80	1.30	3.10	4.50	3.65	1.80	4.80
6	1.90	1.90	2.00	2.70	2.00	1.70	1.80	3.00	4.00	7.10	1.80	5.60
7	1.90	1.90	1.90	2.40	3.00	1.60	1.90	2.20	3.80	5.00	1.80	4.20
8	1.90	1.80	1.90	2.00	2.60	1.60	2.30	2.00	3.00	3.20	1.70	3.10
9	1.90	1.80	1.90	2.00	2.00	1.60	1.70	1.90	2.10	2.20	1.80	2.00
10	1.90	1.70	1.90	2.00	1.70	1.50	1.70	2.00	1.80	1.90	1.90	1.80
11	1.90	1.70	1.80	2.00	1.70	1.50	1.60	3.00	1.60	1.80	1.80	1.80
12	1.90	1.60	1.80	1.90	1.80	2.00	2.70	4.50	1.60	1.80	1.70	1.80
13	1.90	1.60	2.00	1.90	2.00	2.10	1.80	5.30	1.60	1.90	1.70	1.70
14	1.90	1.60	2.60	1.90	2.80	1.70	1.80	4.30	1.50	1.90	1.80	1.60
15	2.00	1.50	2.90	1.80	1.80	1.80	1.50	3.80	1.50	1.80	1.80	1.60
16	2.00	1.50	2.80	1.80	1.70	1.80	2.40	2.80	1.50	1.80	2.00	1.60
17	2.20	1.50	2.60	1.60	1.60	1.70	2.00	2.20	1.50	1.70	2.80	1.60
18	2.00	1.80	2.30	1.60	1.80	2.10	1.80	2.00	1.60	1.70	1.70	1.80
19	2.00	2.00	2.80	1.70	1.70	2.00	1.80	1.80	1.60	1.70	1.80	2.00
20	3.00	2.10	2.00	1.70	1.70	2.00	2.00	3.50	1.50	2.30	1.70	2.80
21	2.60	2.20	1.90	1.70	1.80	1.90	1.80	5.70	1.50	2.50	1.80	2.00
22	2.60	2.00	1.90	1.90	1.80	1.80	2.10	4.10	1.50	5.05	2.00	2.40
23	2.60	2.10	1.80	2.00	2.95	1.80	2.90	2.70	5.65	5.70	2.30	2.10
24	3.00	1.80	1.80	2.30	5.35	1.70	2.80	2.60	13.40	3.80	2.00	1.90
25	3.90	1.80	1.80	3.10	3.00	1.70	3.00	1.70	14.80	3.80	2.10	2.00
26	4.00	1.80	1.80	2.20	2.80	1.70	2.80	1.90	6.20	2.60	1.90	2.00
27	3.20	1.60	1.90	2.20	2.00	1.60	3.00	2.20	2.20	2.00	1.90	2.00
28	2.80	1.60	2.00	1.90	2.00	1.60	3.00	2.00	1.80	1.90	1.80	1.90
29	2.60		2.10	1.80	1.90	1.80	4.60	1.80	1.80	1.90	1.80	1.80
30	2.60		3.60	1.80	1.70	1.80	3.90	4.95	1.90	1.80	1.80	2.00
31	2.40		6.10		1.70		2.00	4.00		2.00		2.80
1899.												
1	1.00	3.20	4.70	4.30	3.10	2.40	2.20	2.80	2.00	1.60	2.00	1.90
2	2.00	3.00	4.00	3.90	3.10	2.90	2.10	2.30	2.10	1.60	2.20	1.90
3	2.10	2.90	6.10	3.80	3.10	2.60	2.10	2.20	2.20	1.60	2.20	1.90
4	2.00	2.90	8.00	4.10	3.10	2.60	2.50	2.00	2.10	1.60	2.40	1.80
5	3.10	7.50	8.00	4.20	3.00	2.50	3.20	2.00	2.10	1.70	2.20	1.80
6	4.00	8.75	7.15	4.70	2.90	2.40	2.50	1.80	1.90	1.70	2.00	1.80
7	10.20	10.10	5.90	4.80	3.20	2.40	2.30	1.80	1.80	1.80	1.90	1.80
8	5.90	9.20	4.10	7.80	4.40	2.40	2.30	2.30	1.70	2.90	1.90	1.70
9	4.80	6.30	3.90	5.90	4.00	2.40	2.20	2.10	1.70	3.00	1.80	1.70
10	4.00	4.00	3.70	4.70	3.50	3.10	2.20	2.00	2.20	2.40	1.70	1.70
11	3.00	3.30	3.50	4.20	3.40	3.30	2.10	2.00	2.00	2.10	1.70	1.70
12	4.40	3.40	3.40	3.80	3.30	3.80	2.10	1.90	1.90	1.90	1.70	2.00
13	4.00	2.90	3.30	3.80	4.10	4.80	2.00	2.10	1.90	1.90	1.70	3.80
14	4.50	2.90	5.20	3.80	4.10	3.90	2.00	2.00	1.70	2.00	1.70	3.40
15	4.40	2.20	8.50	3.70	3.60	3.20	1.90	1.90	1.70	1.90	1.70	2.90
16	4.10	3.00	12.40	3.70	3.10	2.60	1.90	1.90	1.60	1.80	1.70	2.10
17	3.70	5.10	7.90	3.60	3.00	2.50	1.90	1.80	1.60	1.80	1.70	2.00
18	3.50	6.00	6.70	3.50	3.00	2.40	2.30	1.70	1.60	1.80	1.70	1.90
19	3.20	5.00	12.00	3.40	2.90	2.40	2.20	1.70	1.50	1.80	1.70	1.90
20	3.10	4.60	17.80	3.40	2.80	2.30	2.10	1.80	4.20	1.80	1.70	1.90
21	2.80	4.00	13.75	3.40	2.70	2.30	1.90	1.60	2.90	1.80	1.70	1.70
22	2.90	3.90	6.50	3.30	2.70	2.30	1.90	1.60	2.20	1.80	1.70	1.70
23	2.80	3.60	5.30	3.20	2.90	2.30	1.90	1.60	1.90	1.70	1.70	1.70
24	2.90	3.10	4.80	3.20	3.00	2.20	1.90	1.50	1.70	1.70	1.70	2.00
25	2.80	3.10	4.40	3.30	2.80	2.20	2.00	1.50	1.70	1.70	1.70	2.40
26	2.80	3.00	4.30	4.10	2.70	2.80	2.70	1.50	1.70	1.70	1.70	2.40
27	2.80	5.40	5.40	4.10	2.70	3.00	4.30	1.60	1.70	1.70	1.80	2.10
28	2.90	7.80	5.40	3.80	2.60	2.00	3.20	2.00	1.60	1.70	1.80	1.90
29	2.80		6.30	3.40	2.60	2.40	3.00	2.20	1.60	1.70	1.90	1.80
30	2.70		5.30	3.30	2.60	2.20	2.80	2.20	1.50	1.70	1.90	1.80
31	3.30		4.50		2.50		3.50	1.90		1.70		1.70

DAILY GAGE HEIGHT, IN FEET, OF YADKIN RIVER NEAR SALISBURY, N. C., FOR 1900 AND 1901.

1900.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	1.50	1.50	4.60	2.60	2.70	2.37	2.90	2.35	2.10	2.60	2.30	2.70
2.....	1.50	1.50	9.50	2.60	2.60	2.40	2.73	2.20	1.90	2.10	2.30	2.60
3.....	1.60	1.50	6.90	2.50	2.50	2.30	2.55	2.10	1.90	1.90	2.30	2.50
4.....	1.60	1.70	4.40	2.60	2.50	2.50	2.50	2.10	1.90	1.90	2.70	3.60
5.....	1.60	2.80	3.50	2.50	2.40	2.50	2.45	2.20	1.90	2.00	3.05	6.63
6.....	1.60	2.70	3.00	2.40	2.40	2.41	2.50	1.95	1.85	2.20	2.75	4.80
7.....	2.00	2.50	2.90	2.30	2.40	2.44	2.30	1.95	1.80	2.10	2.40	3.55
8.....	2.10	2.30	2.90	2.30	2.30	2.37	2.40	1.95	1.75	2.10	2.30	3.10
9.....	2.20	2.30	4.30	2.30	2.40	2.55	2.35	1.95	1.75	2.30	2.30	2.80
10.....	2.30	2.90	4.40	2.20	2.40	2.55	2.35	1.95	1.70	2.60	2.20	2.65
11.....	2.50	3.90	4.20	2.20	2.30	2.40	2.25	1.90	1.85	2.20	2.25	2.50
12.....	4.30	4.10	3.50	2.50	2.30	2.30	2.25	1.85	1.70	2.05	2.30	2.50
13.....		6.00	3.30	2.70	2.30	2.30	2.25	1.85	1.65	2.05	2.20	2.50
14.....	3.90	9.10	3.00	2.60	2.30	2.70	2.50	1.80	1.65	2.10	2.20	2.50
15.....	3.00	6.00	2.70	2.00	2.10	2.85	2.40	2.00	1.65	2.05	2.15	2.45
16.....	2.50	4.10	4.50	2.40	2.10	2.65	2.22	1.85	4.10	2.20	2.15	2.47
17.....	2.30	3.20	6.10	2.30	2.10	4.78	2.15	1.90	4.95	2.10	2.15	2.40
18.....	2.30	2.80	4.60	2.30	2.40	4.54	2.00	2.00	2.80	2.00	2.15	2.35
19.....	2.30	2.40	4.60	9.95	2.50	4.52	1.90	1.90	2.20	2.00	2.15	2.40
20.....	4.90	2.30	3.70	10.60	2.40	3.47	2.00	1.85	2.00	2.00	2.20	2.40
21.....	5.50	2.40	4.60	6.00	2.30	2.95	2.00	1.85	2.00	1.90	2.35	2.70
22.....	4.90	5.60	3.80	7.00	2.10	2.65	2.45	1.90	2.00	2.00	2.30	3.30
23.....	3.00	6.30	3.20	6.70	2.10	3.57	2.30	2.60	2.25	2.00	2.25	3.30
24.....	2.60	4.30	3.00	4.50	2.10	7.00	2.65	3.05	2.10	4.55	2.20	3.30
25.....	2.40	3.80	2.80	3.90	4.00	4.68	2.65	2.25	2.00	6.81	2.20	3.20
26.....	2.90	3.50	3.90	3.50	3.20	4.40	2.55	2.30	1.90	3.45	4.08	2.90
27.....	2.30	2.90	3.80	3.30	2.70	4.35	3.30	2.10	1.90	2.90	7.85	2.70
28.....	2.20	2.90	3.40	3.10	2.30	3.45	3.05	2.00	1.90	2.60	3.90	2.60
29.....	2.20		3.00	2.90	2.30	3.55	2.55	1.90	1.90	2.50	3.20	2.55
30.....	2.00		2.90	2.70	2.10	3.50	2.30	1.90	1.75	2.30	2.80	2.55
31.....	1.90		2.80		2.10		2.20	2.05		2.35		3.25
1901.												
1.....	3.45	2.50	2.35	3.70	3.20	3.60	5.20	2.95	4.55	5.20	2.70	2.60
2.....	3.05	2.50	2.35	3.25	3.15	3.50	4.85	2.82	4.70	4.00	2.70	2.60
3.....	2.80	2.45	2.35	10.00	3.10	3.40	3.60	2.75	3.95	3.85	2.65	2.55
4.....	2.65	3.15	2.45	10.85	3.05	3.25	3.40	2.65	3.70	3.45	2.70	2.95
5.....	2.50	3.35	2.40	6.70	3.00	3.30	3.25	2.70	3.50	3.20	2.70	3.10
6.....	2.50	3.05	2.35	4.40	3.00	8.10	3.15	5.77	3.40	3.05	2.70	2.75
7.....	2.50	2.72	2.35	3.80	2.90	3.60	3.40	11.38	3.25	3.00	2.65	2.60
8.....	2.50	2.50	2.35	3.50	3.05	3.85	4.35	9.92	3.25	2.95	2.60	2.60
9.....	2.50	2.65	2.35	3.25	3.45	3.40	4.60	4.80	3.20	2.95	2.60	2.65
10.....	2.45	3.00	2.40	3.05	3.60	3.15	4.22	3.80	3.15	2.90	2.65	2.60
11.....	3.10	2.85	2.60	3.00	4.00	3.10	3.40	3.50	3.15	2.85	2.60	2.90
12.....	5.30	2.75	4.00	2.85	3.65	3.00	3.15	3.95	3.30	2.85	2.60	2.85
13.....	8.23	2.70	3.10	2.80	3.20	2.90	3.00	5.32	3.10	2.90	2.60	2.75
14.....	4.83	2.60	2.70	3.30	2.95	2.95	3.35	9.28	3.10	4.00	2.65	2.75
15.....	3.80	2.56	2.60	4.60	2.85	5.85	8.08	10.45	3.00	3.30	2.60	6.17
16.....	3.35	2.55	2.45	3.65	2.75	8.80	6.95	9.82	3.00	3.00	2.60	8.58
17.....	3.05	2.55	2.45	3.25	2.95	9.00	5.15	7.75	3.35	2.85	2.60	5.10
18.....	3.00	2.55	2.45	3.05	3.60	7.57	4.45	7.70	3.85	2.80	2.60	3.90
19.....	2.80	2.50	2.40	3.00	2.90	4.40	5.28	6.20	4.60	2.80	2.50	3.35
20.....	2.70	2.50	2.40	7.50	3.30	4.78	5.05	5.40	3.60	2.80	2.55	3.10
21.....	2.70	2.45	2.40	15.90	3.45	4.50	3.75	4.75	3.20	2.80	3.50	2.90
22.....	2.60	2.40	2.45	11.25	9.52	4.45	3.55	4.25	3.05	2.75	2.55	2.75
23.....	2.60	2.40	2.50	5.22	14.83	6.25	3.20	4.55	3.00	2.75	2.55	2.50
24.....	2.60	2.40	2.40	4.53	10.50	6.65	3.00	6.60	2.95	2.70	3.00	2.90
25.....	2.60	2.40	2.40	4.07	5.15	5.15	2.90	5.87	2.90	2.70	3.40	3.20
26.....	2.55	2.30	6.65	3.80	4.20	4.68	2.85	6.15	2.85	2.70	2.85	3.20
27.....	2.50	2.45	9.92	3.60	4.80	4.60	2.80	6.15	2.85	2.70	2.65	3.40
28.....	2.50	2.40	7.58	3.50	6.33	4.25	2.85	5.53	2.90	2.70	2.60	4.25
29.....	2.45		4.60	3.35	5.33	3.55	2.90	5.87	4.50	2.65	2.60	8.20
30.....	2.45		3.60	3.25	4.35	5.00	2.70	6.10	5.80	2.70	2.60	15.72
31.....	2.50		3.60		3.90		2.75	4.70		2.70		17.97



DAILY GAGE HEIGHT, IN FEET, OF YADKIN RIVER NEAR SALISBURY, N. C., FOR 1902 AND 1903.

1902.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	2.60	3.95	9.45	4.20	2.90	2.50	2.85	2.00	1.95	2.05	2.10	5.00
2.....	2.60	5.75	7.03	3.70	2.80	2.50	2.80	2.80	1.85	2.05	2.15	4.50
3.....	2.55	6.17	5.35	3.45	2.80	2.50	2.35	2.70	1.80	2.15	2.18	6.00
4.....	2.95	4.95	4.65	3.35	2.85	2.35	2.30	2.50	2.05	2.10	2.08	5.82
5.....	3.55	3.90	4.10	3.35	2.80	2.35	2.30	2.05	2.45	2.18	2.25	4.60
6.....	3.40	3.40	4.05	3.40	2.80	2.15	2.30	2.00	2.20	3.52	2.10	5.30
7.....	3.30	3.25	3.80	3.25	2.85	2.25	2.40	2.00	1.90	4.55	2.80	3.98
8.....	3.25	3.20	3.50	3.35	2.85	2.40	2.20	2.10	1.85	2.90	2.55	3.34
9.....	3.20	3.10	3.50	3.80	2.85	2.70	2.40	2.05	2.10	2.50	2.30	2.95
10.....	3.15	3.05	3.55	3.45	2.75	2.40	2.40	2.00	4.50	2.30	2.30	2.70
11.....	3.15	3.00	3.40	3.25	2.55	2.35	3.00	2.10	3.30	2.30	2.08	2.65
12.....	3.15	2.90	3.30	3.15	2.75	2.88	2.60	2.10	2.50	2.95	2.05	2.60
13.....	3.00	2.90	3.25	3.20	2.65	2.60	2.40	2.10	2.15	3.50	2.08	2.95
14.....	2.90	2.85	3.25	3.10	2.70	2.50	2.40	3.42	2.00	2.75	2.08	3.15
15.....	2.85	2.80	3.20	3.10	2.70	2.65	2.25	4.25	2.00	2.44	2.00	2.85
16.....	2.95	2.90	3.20	3.10	3.20	6.21	2.05	3.45	2.00	2.25	2.10	2.70
17.....	2.95	2.90	5.65	3.10	2.90	12.48	2.15	3.15	1.97	2.12	2.15	3.45
18.....	2.95	2.85	5.00	3.30	2.90	9.57	2.05	2.50	1.85	2.10	3.67	4.52
19.....	2.90	2.85	3.95	3.35	3.00	4.95	1.95	2.15	1.90	2.25	4.90	3.50
20.....	2.85	2.85	3.50	3.20	2.90	3.30	2.10	2.00	1.85	2.15	3.80	3.05
21.....	2.85	2.90	3.30	3.20	2.95	2.90	2.20	2.00	1.85	2.25	2.80	2.88
22.....	3.90	3.45	3.30	3.10	2.80	2.75	2.40	2.10	2.00	2.05	2.45	3.97
23.....	3.85	4.20	3.30	3.00	2.80	2.62	2.50	2.55	1.85	1.70	2.40	4.50
24.....	3.30	3.80	3.20	3.00	2.65	2.50	2.10	2.20	1.80	1.70	2.35	3.60
25.....	3.15	6.23	3.25	2.95	2.65	2.50	2.00	2.10	1.95	1.90	2.20	3.15
26.....	3.10	8.37	3.10	2.95	2.85	2.60	2.00	1.90	1.90	2.10	3.00	2.90
27.....	3.00	6.40	3.05	2.90	2.85	2.60	1.95	1.85	3.85	2.05	3.30	2.75
28.....	3.35	4.95	3.05	2.95	2.70	3.85	2.20	1.95	3.00	2.95	2.90	2.60
29.....	3.35	-----	4.00	2.90	2.60	4.30	2.15	1.90	2.40	2.95	2.50	2.60
30.....	3.40	-----	7.80	2.95	2.50	3.25	2.00	1.88	2.00	2.65	2.50	2.65
31.....	3.55	-----	5.75	-----	2.45	-----	2.00	1.75	-----	2.20	-----	2.75
1903.												
1.....	2.55	3.00	7.55	6.35	3.20	3.30	2.70	2.55	2.75	1.80	1.82	1.80
2.....	2.40	2.85	5.90	4.70	3.15	2.88	2.40	5.00	1.85	1.80	1.90	1.75
3.....	10.40	2.80	4.30	4.25	3.05	2.80	2.40	3.10	2.19	1.90	1.75	1.80
4.....	10.06	4.40	3.70	4.10	3.15	2.80	2.45	2.40	2.08	1.85	1.76	1.74
5.....	6.07	8.67	3.50	4.95	3.15	2.84	2.50	3.40	1.94	1.95	2.38	1.75
6.....	4.47	6.60	3.38	4.10	3.10	3.80	2.60	3.00	1.88	1.79	2.85	1.68
7.....	3.79	4.05	3.45	3.80	3.05	8.30	3.60	2.90	2.20	1.86	2.30	1.90
8.....	3.45	5.50	3.50	7.25	3.00	9.40	2.90	2.30	2.10	1.83	1.96	1.75
9.....	3.15	6.50	5.66	10.65	2.95	4.60	2.50	2.10	3.80	3.81	2.00	1.65
10.....	2.90	5.00	4.72	7.50	2.70	3.50	2.50	2.05	3.85	2.96	1.80	1.68
11.....	2.80	4.45	5.20	5.10	2.95	3.85	2.20	1.85	2.19	2.22	1.80	1.80
12.....	3.35	6.45	5.59	4.35	2.85	3.75	2.35	2.40	1.95	2.09	1.75	1.62
13.....	3.40	5.65	5.15	4.55	2.80	3.25	2.55	3.15	1.90	1.86	1.72	1.88
14.....	2.90	4.25	4.45	6.95	2.90	2.88	3.70	2.75	1.92	1.65	1.75	2.02
15.....	2.80	3.70	4.00	7.15	2.90	2.80	2.80	2.80	1.80	1.84	1.85	1.90
16.....	2.80	3.50	3.70	5.50	2.90	2.65	2.50	4.20	1.80	1.81	1.90	1.80
17.....	2.75	9.95	3.50	4.35	2.80	2.55	2.20	3.15	6.25	1.89	1.78	1.70
18.....	2.78	10.50	3.40	3.95	2.70	2.85	2.15	3.70	7.00	2.06	2.78	1.70
19.....	2.60	5.65	3.55	3.70	2.70	2.85	2.10	4.05	4.02	2.53	2.90	1.70
20.....	2.55	4.12	3.25	3.65	2.65	2.55	3.30	3.05	2.80	2.02	2.30	1.75
21.....	2.60	3.75	4.05	3.80	2.65	2.60	2.25	2.85	2.25	1.91	1.90	2.35
22.....	3.70	3.55	8.30	3.88	2.65	2.60	2.05	2.40	2.02	1.96	2.00	2.60
23.....	3.50	3.45	10.30	3.60	2.60	2.80	1.95	2.20	1.82	1.86	2.04	2.20
24.....	3.10	3.25	15.40	3.55	2.55	2.45	2.20	2.12	1.85	1.85	1.70	2.05
25.....	3.00	3.20	10.60	3.44	2.55	2.80	1.85	1.90	1.87	1.85	1.80	2.05
26.....	2.90	3.15	6.00	3.50	2.55	2.80	1.90	2.00	1.87	1.94	1.80	2.15
27.....	2.75	3.05	4.50	3.65	2.68	3.65	1.95	1.75	1.96	1.74	1.80	2.15
28.....	3.65	4.15	4.15	3.58	2.65	3.70	1.75	1.79	1.95	1.75	1.75	1.98
29.....	4.10	-----	3.95	3.32	4.40	3.30	1.85	1.80	1.75	1.64	1.82	1.75
30.....	3.45	-----	5.50	3.25	3.10	3.15	2.55	1.85	1.85	1.70	1.90	1.88
31.....	3.10	-----	8.80	-----	3.18	-----	2.55	2.84	-----	1.72	-----	1.80

MEAN DAILY GAGE HEIGHT, IN FEET, OF YADKIN RIVER NEAR SALISBURY, N. C., 1904 AND 1905.

1904.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1	1.75	1.95	2.46	2.00	1.85	2.30	4.20	2.35	1.65	1.35	1.35	1.45
2	1.85	1.74	2.35	2.05	1.95	4.65	3.05	2.25	3.10	1.25	1.35	1.50
3	1.90	1.80	2.25	1.95	1.75	5.10	2.60	3.00	3.00	1.25	1.35	1.95
4	1.92	1.88	2.20	2.05	1.80	3.10	2.25	2.55	2.35	1.30	1.50	2.30
5	1.65	1.90	2.15	1.90	2.05	2.55	2.05	2.05	2.80	1.25	1.75	2.15
6	1.30	1.85	2.00	1.85	2.10	2.30	1.85	2.40	3.15	1.30	2.10	3.00
7	1.45	2.05	2.20	1.85	1.90	2.10	2.10	2.65	2.50	1.30	2.05	3.05
8	1.85	3.35	5.20	1.95	2.20	3.00	1.90	4.85	2.15	1.35	1.60	2.55
9	1.85	3.45	4.55	1.90	2.35	2.45	1.80	3.70	1.80	1.35	1.50	2.00
10	1.90	2.75	3.25	2.35	2.75	2.05	2.05	3.50	1.70	1.30	1.45	1.90
11	1.98	2.25	2.75	2.20	2.25	2.25	2.45	3.65	2.05	1.30	1.50	1.90
12	1.85	2.15	2.50	1.90	2.25	4.20	1.95	3.80	1.80	1.30	1.50	1.85
13	1.80	2.10	2.40	1.85	2.00	3.25	1.85	3.00	1.60	1.25	1.45	1.70
14	1.85	2.04	2.40	1.80	1.85	2.30	1.80	2.45	1.65	1.30	2.70	1.70
15	1.82	2.10	2.35	1.80	2.35	2.00	1.65	2.15	1.60	1.20	2.65	1.65
16	1.78	2.00	2.25	1.80	2.35	1.90	1.85	2.80	1.60	1.10	2.05	1.65
17	1.78	1.96	2.05	1.90	1.95	1.85	1.85	3.80	1.60	1.25	1.70	1.65
18	1.90	1.80	1.95	1.95	2.00	2.60	1.85	2.90	1.50	1.20	1.60	1.70
19	1.64	1.75	1.95	1.75	6.60	2.50	1.65	2.25	1.50	1.20	1.60	1.85
20	1.70	3.00	2.10	1.75	4.25	2.50	1.55	2.00	1.50	1.30	1.50	1.70
21	1.68	2.80	2.10	1.70	2.85	2.35	1.55	2.50	1.50	1.25	1.65	1.65
22	1.68	3.95	1.95	1.70	2.40	2.10	1.70	2.85	1.50	1.30	1.50	1.60
23	1.95	5.10	2.05	1.70	2.30	2.25	2.15	2.45	1.50	1.20	1.55	1.60
24	2.60	4.20	2.30	1.70	2.00	1.90	3.55	2.30	1.50	1.20	1.60	1.65
25	2.38	3.10	4.40	1.90	1.95	1.80	2.85	2.45	1.40	1.20	1.60	1.85
26	1.95	2.55	3.30	1.75	1.85	1.65	2.25	2.50	1.45	1.30	1.55	1.95
27	1.85	2.48	2.65	2.00	1.90	1.75	2.30	1.90	1.45	1.35	1.45	2.05
28	1.92	2.70	2.70	2.30	1.85	2.05	2.55	1.95	1.40	1.35	1.55	2.65
29	1.75	2.68	2.35	2.00	1.75	4.05	3.15	1.90	1.50	1.35	1.50	2.85
30	1.60		2.10	1.90	1.85	6.35	5.05	1.65	1.35	1.30	1.45	2.50
31	1.78		2.05		1.70		3.00	1.65		1.30		2.05
1905.												
1	1.9	1.85	3.0	2.0	2.1	2.6	1.6	2.35	1.95	1.55	1.70	1.6
2	2.0	1.9	2.85	2.0	1.85	2.15	1.9	2.0	1.9	1.7	1.65	1.6
3	1.85	1.8	2.7	2.0	1.85	1.85	2.25	1.9	2.2	1.6	1.65	1.8
4	1.9	1.7	2.6	1.8	2.0	2.0	2.05	1.9	2.4	1.6	1.6	4.1
5	1.8	1.75	2.55	1.85	2.15	2.0	2.55	2.1	2.1	1.7	1.6	3.2
6	1.65	1.7	2.5	3.0	3.6	1.75	5.0	2.75	2.9	1.65	1.75	2.25
7	3.6	1.7	2.25	3.9	5.4	1.7	5.0	2.6	2.1	1.6	1.65	1.9
8	4.4	2.15	2.2	3.0	5.6	1.7	3.2	2.25	2.0	1.5	1.65	1.8
9	3.3	1.8	2.3	2.5	4.4	1.6	2.45	4.4	1.9	1.6	1.65	1.9
10	2.4	1.85	2.3	2.4	2.95	1.65	2.5	3.7	1.95	1.5	1.6	5.3
11	2.3	2.35	2.7	2.15	4.5	1.65	2.85	6.7	2.0	1.6	1.6	4.9
12	2.35	2.5	2.85	2.15	3.8	1.75	3.1	6.8	1.8	3.6	1.55	3.3
13	6.0	3.6	2.95	5.2	4.3	1.65	8.2	7.5	2.05	2.9	1.7	2.55
14	5.3	4.8	2.7	3.5	4.2	1.6	9.5	5.9	1.8	2.0	1.6	2.25
15	3.6	3.8	2.5	4.8	4.4	1.7	8.4	4.2	1.75	1.8	1.6	2.2
16	2.9	2.95	2.3	3.6	4.3	1.55	6.9	4.0	1.7	1.9	1.6	2.8
17	2.35	2.5	2.2	3.0	5.0	1.65	4.4	3.2	1.7	1.7	1.6	3.1
18	2.1	2.6	2.1	2.5	4.0	2.2	3.4	3.2	1.9	1.75	1.6	2.85
19	2.2	2.5	2.2	2.3	3.1	2.3	2.8	2.7	1.85	1.7	1.6	2.5
20	2.1	2.5	2.2	2.2	2.65	2.4	2.8	2.55	1.8	1.7	1.75	2.35
21	2.0	8.1	2.1	2.05	2.5	2.2	2.5	2.55	1.8	1.8	1.6	5.7
22	2.1	8.4	2.1	2.05	2.4	2.05	2.4	3.0	2.0	1.65	1.65	9.1
23	2.0	7.0	2.1	2.15	2.15	1.8	3.0	2.8	1.8	1.7	1.65	5.8
24	1.85	5.8	2.0	2.15	2.2	1.8	2.75	2.8	1.75	1.65	1.6	4.0
25	1.9	4.5	2.0	1.95	2.1	2.2	2.35	3.0	1.8	1.7	1.6	3.4
26	1.7	4.2	2.2	1.9	2.0	2.1	2.5	3.3	1.65	1.65	1.6	2.95
27	1.3	3.8	2.25	2.0	2.25	1.75	2.1	3.8	1.65	1.8	1.6	2.7
28	1.25	3.4	2.1	2.25	2.85	1.65	2.0	2.35	1.6	1.9	1.6	2.5
29	1.85		2.05	2.1	2.05	1.55	3.2	2.1	1.6	1.85	1.6	3.4
30	1.95		2.0	2.1	2.15	1.65	3.4	2.05	1.6	1.8	1.6	3.4
31	1.9		1.95		2.55		3.0	2.0		1.7		2.95

DAILY GAGE HEIGHT, IN FEET, OF YADKIN RIVER NEAR SALISBURY, N. C., FOR 1906 AND 1907.

1906.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	2.8	3.55	2.6	4.8	2.75	2.2	2.5	3.95	9.8	3.55	2.9	2.85
2.....	2.65	3.35	2.55	3.9	2.8	2.15	2.55	5.3	6.7	3.2	2.9	2.95
3.....	2.4	3.2	2.5	3.35	2.85	2.3	2.3	5.7	4.2	3.3	2.85	2.9
4.....	8.4	3.0	2.7	3.15	2.85	2.35	2.7	4.1	5.0	4.0	2.95	2.8
5.....	9.1	3.0	4.0	3.0	2.95	2.75	4.2	3.45	4.2	4.8	2.9	2.8
6.....	5.1	3.0	3.2	2.95	3.0	3.0	2.5	3.15	3.65	4.0	2.8	2.8
7.....	3.7	2.9	2.9	2.9	2.85	2.75	2.5	2.9	3.4	3.7	2.8	2.75
8.....	3.2	2.8	2.8	2.9	3.55	2.45	2.8	2.8	3.25	3.5	2.8	2.8
9.....	3.05	2.8	2.8	2.85	3.05	2.35	3.6	2.75	3.2	3.15	2.75	2.8
10.....	2.85	2.85	2.8	2.9	2.65	2.7	4.4	2.65	3.1	3.05	2.75	2.8
11.....	2.7	2.8	2.7	3.0	2.5	4.6	3.3	2.55	2.95	3.1	2.9	3.1
12.....	3.0	2.7	2.7	2.8	2.4	3.8	2.7	2.55	2.95	2.95	2.85	3.35
13.....	4.0	2.6	2.5	2.65	2.55	3.0	2.45	2.55	3.15	2.8	2.75	3.1
14.....	3.85	2.6	2.5	2.65	2.55	3.9	2.35	2.65	4.2	3.0	2.75	2.9
15.....	3.7	2.65	2.6	2.85	2.35	5.0	2.4	3.6	3.4	2.8	2.75	2.8
16.....	3.5	2.55	5.4	3.6	2.3	5.9	2.8	5.4	3.1	2.75	2.85	2.85
17.....	3.2	2.5	4.6	3.5	2.35	5.8	4.6	8.2	2.8	2.75	2.85	2.85
18.....	3.0	2.6	3.55	3.05	2.25	4.5	3.4	5.6	2.8	2.8	2.85	3.1
19.....	2.85	2.65	3.15	2.85	2.25	4.0	3.2	4.8	2.95	3.7	3.0	3.4
20.....	2.75	2.5	5.5	2.7	2.35	3.4	3.05	3.8	3.4	9.4	8.5	3.2
21.....	2.75	2.45	5.0	2.65	2.4	3.4	3.9	4.0	3.2	7.1	7.2	3.5
22.....	2.75	2.9	3.8	2.75	2.2	2.95	6.9	4.0	3.0	4.8	4.1	3.4
23.....	4.8	3.0	3.3	2.75	2.2	3.3	6.4	3.85	3.5	4.1	3.65	3.2
24.....	9.0	2.9	3.05	2.35	2.2	2.7	5.0	3.55	3.5	3.7	3.35	3.0
25.....	5.5	2.7	3.1	2.3	2.2	3.1	3.85	3.25	3.5	3.5	3.25	2.8
26.....	4.3	2.7	3.1	2.25	2.15	3.45	5.7	3.15	3.0	3.35	3.2	2.55
27.....	4.7	2.5	3.0	2.25	2.35	3.8	4.2	3.25	2.8	3.25	3.05	2.5
28.....	7.2	2.55	2.95	2.5	2.8	3.0	5.9	3.65	2.85	3.15	3.05	2.9
29.....	6.4	-----	3.05	2.6	2.7	2.7	3.55	4.8	3.15	3.15	3.0	2.95
30.....	4.8	-----	3.4	2.65	2.4	2.7	3.35	10.9	3.25	3.0	2.9	3.0
31.....	4.0	-----	4.4	-----	2.25	-----	4.2	11.9	-----	3.0	-----	3.15
1907.												
1.....	7.20	2.60	3.20	2.80	3.00	2.50	4.00	2.45	2.00	2.70	2.20	2.60
2.....	5.50	2.60	3.35	3.10	2.95	6.00	3.10	2.45	2.00	2.50	2.25	2.50
3.....	4.10	2.75	3.90	2.80	2.90	6.40	3.30	2.40	2.00	2.40	2.40	2.50
4.....	3.60	2.75	3.65	2.65	3.05	4.30	3.20	2.40	2.10	2.40	2.70	2.45
5.....	3.40	2.60	3.15	2.60	3.10	3.45	2.90	2.55	2.15	2.30	2.40	2.40
6.....	3.25	2.80	3.00	2.60	2.90	3.00	2.90	2.30	2.90	2.30	2.30	2.45
7.....	3.10	2.80	2.90	5.20	2.70	2.85	2.85	2.40	2.40	2.40	2.20	2.35
8.....	3.00	2.60	2.80	4.40	2.70	2.65	2.80	2.60	2.05	2.30	2.25	2.45
9.....	3.00	2.60	2.95	3.65	2.80	2.75	2.60	2.55	2.10	2.40	2.25	2.50
10.....	2.95	2.75	3.90	3.25	2.90	2.90	2.55	2.70	2.10	2.30	2.35	3.10
11.....	2.90	2.75	3.60	3.10	2.80	4.20	2.50	3.25	3.20	2.20	2.50	4.40
12.....	2.80	2.75	3.45	2.90	2.70	6.90	2.55	2.60	3.20	2.20	2.45	3.65
13.....	2.90	2.60	3.20	2.85	2.65	4.30	2.80	2.40	2.70	2.15	2.40	3.10
14.....	2.90	2.60	3.05	2.80	2.50	3.60	3.00	2.60	2.25	2.25	2.25	4.60
15.....	2.80	2.60	3.40	2.80	2.45	4.20	3.00	2.60	2.10	2.20	2.40	7.70
16.....	2.75	2.55	3.45	2.65	2.50	3.60	2.75	2.40	2.20	2.20	2.30	5.70
17.....	2.70	2.60	3.30	2.60	2.55	3.10	2.70	2.25	2.10	2.20	2.30	4.20
18.....	2.70	2.65	3.00	2.65	2.55	2.75	3.20	2.90	2.05	2.20	2.30	3.50
19.....	2.80	2.60	2.90	2.60	2.55	2.65	3.05	3.15	2.10	2.10	2.30	3.15
20.....	2.80	2.60	2.85	2.70	2.50	2.60	3.00	2.65	2.05	2.10	2.50	3.00
21.....	2.75	2.80	2.80	2.75	2.35	2.70	2.80	2.40	2.00	2.15	2.45	2.80
22.....	2.70	2.65	2.80	2.70	2.35	2.95	2.60	2.30	1.95	2.10	2.70	2.80
23.....	2.70	2.55	2.70	3.65	2.35	2.70	2.40	2.40	2.40	2.10	4.30	6.10
24.....	2.60	2.60	2.70	4.60	2.35	3.90	2.40	2.30	3.00	2.20	7.00	9.80
25.....	2.60	2.75	2.70	4.10	2.35	3.35	2.40	2.35	4.50	2.10	6.70	6.30
26.....	2.60	3.40	2.60	3.35	2.50	3.05	2.30	2.30	3.10	2.10	4.40	4.20
27.....	2.75	3.60	2.60	3.10	2.55	2.70	2.40	2.20	2.70	2.00	3.45	3.60
28.....	2.70	3.25	2.65	4.20	2.55	3.15	2.40	2.20	2.60	2.25	2.95	3.30
29.....	2.60	-----	2.60	3.70	2.40	2.95	2.40	2.10	2.85	2.30	2.75	3.10
30.....	2.55	-----	2.50	3.20	2.30	5.00	2.40	2.10	3.00	2.20	2.80	3.50
31.....	2.60	-----	2.60	-----	2.30	-----	2.60	2.10	-----	2.20	-----	5.80

MEAN DAILY GAGE HEIGHT, IN FEET, OF YADKIN RIVER NEAR SALISBURY, N. C., FOR 1908.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1.....	4.5	2.9	3.3	3.2	4.3	2.65	2.4	2.7	2.9	2.5
2.....	3.6	3.3	3.4	4.0	3.55	2.6	2.5	2.5	2.85	2.4
3.....	3.3	3.0	3.35	4.6	3.15	2.5	4.0	2.5	2.7	2.3
4.....	3.1	2.7	3.3	3.75	3.0	3.3	4.6	2.4	2.65	2.35
5.....	3.9	2.9	3.25	3.35	3.0	6.2	5.6	2.35	2.8	2.4
6.....	3.8	3.0	3.8	3.2	2.9	3.8	5.4	3.0	5.7	2.3
7.....	5.1	3.35	3.9	3.2	3.2	3.15	4.5	3.4	5.1	2.35
8.....	8.3	3.15	3.4	3.15	4.1	2.95	3.8	3.05	5.1	2.35
9.....	6.2	3.05	3.3	3.1	3.8	2.65	3.9	2.9	4.5	2.4
10.....	4.3	3.0	3.3	3.0	3.3	2.7	3.9	2.9	3.35	4.6
11.....	3.5	3.05	3.25	3.0	3.1	2.85	3.45	2.6	3.05	6.9
12.....	7.4	3.95	3.4	2.95	2.95	2.85	3.0	2.7	2.65	4.2
13.....	9.1	6.3	3.6	2.9	3.0	3.4	2.8	2.45	2.6	3.2
14.....	5.7	8.2	3.4	2.9	2.8	2.9	2.75	2.5	2.6	2.8
15.....	4.3	8.7	3.25	2.9	2.8	2.9	2.9	2.2	2.5	2.8
16.....	3.6	11.3	3.15	3.75	2.75	3.85	2.65	2.25	2.5	2.7
17.....	3.4	7.5	3.1	4.1	2.65	3.3	2.55	2.4	2.45	2.5
18.....	3.2	4.8	3.1	3.6	2.8	2.85	2.5	2.25	2.4	2.5
19.....	3.1	4.5	3.15	3.35	3.3	2.75	2.45	2.35	2.35	2.5
20.....	3.0	5.0	3.1	3.2	3.4	2.75	2.65	2.8	2.4	2.4
21.....	3.0	4.6	3.4	3.1	3.6	3.0	2.5	2.8	2.5	2.5
22.....	2.95	4.0	3.75	3.0	3.2	3.45	3.3	2.75	2.4	2.5
23.....	2.9	3.65	3.8	2.9	3.35	2.9	3.7	2.95	2.4	2.7
24.....	2.9	3.5	7.1	2.9	3.15	3.0	3.5	4.8	2.4	4.2
25.....	2.7	3.35	6.5	3.05	3.0	2.8	3.0	6.8	2.4	7.1
26.....	2.7	3.45	4.7	3.1	2.8	2.7	2.9	13.4	2.3	4.7
27.....	2.95	3.9	3.8	3.5	2.7	2.55	2.55	14.1	2.3	3.7
28.....	3.0	3.75	3.55	3.2	2.7	2.7	2.65	7.3	2.7	3.4
29.....	2.9	3.55	3.3	3.2	2.7	2.5	3.3	4.2	3.05	4.6
30.....	2.8		3.25	3.0	2.8	2.4	2.75	3.5	2.9	6.2
31.....	2.8		3.15		2.8		3.2	3.15		5.2

RATING TABLE FOR YADKIN RIVER NEAR SALISBURY, N. C., FOR 1896.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.00	500	2.00	3,000	3.00	6,400	4.00	9,800
1.10	660	2.10	3,340	3.10	6,740	4.10	10,160
1.20	850	2.20	3,680	3.20	7,080	4.20	10,540
1.30	1,050	2.30	4,020	3.30	7,420	4.30	10,940
1.40	1,275	2.40	4,360	3.40	7,760	4.40	11,390
1.50	1,500	2.50	4,700	3.50	8,100	4.50	11,840
1.60	1,740	2.60	5,040	3.60	8,440	4.60	12,290
1.70	1,980	2.70	5,380	3.70	8,780	4.70	12,740
1.80	2,320	2.80	5,720	3.80	9,120	4.80	13,200
1.90	2,660	2.90	6,060	3.90	9,460	4.90	13,700

RATING TABLE FOR YADKIN RIVER NEAR SALISBURY, N. C., FOR 1897.

1.0	560	3.2	7,116	5.4	14,860	7.6	22,604
1.2	900	3.4	7,820	5.6	15,564	7.8	23,308
1.4	1,310	3.6	8,524	5.8	16,268	8.0	24,012
1.6	1,760	3.8	9,228	6.0	16,972	8.5	25,772
1.8	2,300	4.0	9,932	6.2	17,676	9.0	27,532
2.0	2,920	4.2	10,636	6.4	18,380	9.5	29,292
2.2	3,596	4.4	11,340	6.6	19,084	10.0	31,052
2.4	4,300	4.6	12,044	6.8	19,788	10.5	32,812
2.6	5,004	4.8	12,748	7.0	20,492	11.0	34,572
2.8	5,708	5.0	13,452	7.2	21,196	11.5	36,332
3.0	6,412	5.2	14,156	7.4	21,900		

RATING TABLE FOR YADKIN RIVER NEAR SALISBURY, N. C., FOR 1898.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.20	1,000	3.20	6,350	5.50	12,410	10.50	42,115
1.40	1,250	3.40	7,150	6.00	13,585	11.00	46,520
1.60	1,550	3.60	8,000	6.50	14,780	11.50	50,925
1.80	1,900	3.80	8,850	7.00	15,980	12.00	55,330
2.00	2,325	4.00	9,290	7.50	18,830	12.50	59,735
2.20	2,850	4.20	9,675	8.00	21,700	13.00	64,140
2.40	3,450	4.40	10,065	8.50	25,300	13.50	68,545
2.60	4,100	4.60	10,450	9.00	28,900	14.00	72,950
2.80	4,800	4.80	10,840	9.50	33,305	14.50	77,355
3.00	5,550	5.00	11,235	10.00	37,710	15.00	81,760

RATING TABLE FOR YADKIN RIVER NEAR SALISBURY, N. C., FOR 1899.

1.6	1,600	3.8	8,900	7.5	25,650	13.0	69,000
1.8	2,000	4.0	9,700	8.0	29,100	13.5	73,000
2.0	2,500	4.2	10,500	8.5	33,000	14.0	77,000
2.2	3,100	4.4	11,300	9.0	37,000	14.5	81,000
2.4	3,700	4.6	12,100	9.5	41,000	15.0	85,000
2.6	4,300	4.8	12,900	10.0	45,000	16.0	93,000
2.8	5,000	5.0	13,700	10.5	49,000	17.0	101,000
3.0	5,700	5.5	15,700	11.0	53,000	18.0	109,000
3.2	6,500	6.0	17,900	11.5	57,000	19.0	117,000
3.4	7,300	6.5	20,200	12.0	61,000		
3.6	8,100	7.0	22,700	12.5	65,000		

RATING TABLE FOR YADKIN RIVER NEAR SALISBURY, N. C., FOR 1900.

1.2	1,040	3.4	6,285	6.5	21,000	12.0	58,750
1.4	1,300	3.6	6,990	7.0	24,060	12.5	62,625
1.6	1,560	3.8	7,720	7.5	27,130	13.0	66,525
1.8	1,870	4.0	8,450	8.0	30,425	13.5	70,425
2.0	2,250	4.2	9,270	8.5	33,750	14.0	74,325
2.2	2,750	4.4	10,100	9.0	37,125	14.5	78,375
2.4	3,250	4.6	10,960	9.5	40,500	15.0	82,500
2.6	3,790	4.8	11,880	10.0	43,950	16.0	91,000
2.8	4,370	5.0	12,800	10.5	47,560	17.0	99,800
3.0	4,950	5.5	15,250	11.0	51,250	18.0	108,200
3.2	5,610	6.0	18,000	11.5	55,000	19.0	116,800

RATING TABLE FOR YADKIN RIVER NEAR SALISBURY, N. C., FOR 1901.

2.2	2,120	4.8	11,800	7.4	22,900	13.0	55,700
2.4	2,750	5.0	12,600	7.6	23,810	13.5	59,700
2.6	3,460	5.2	13,420	7.8	24,730	14.0	63,700
2.8	4,180	5.4	14,240	8.0	25,650	14.5	67,900
3.0	4,900	5.6	15,070	8.5	28,000	15.0	72,400
3.2	5,640	5.8	15,910	9.0	30,400	15.5	77,150
3.4	6,380	6.0	16,750	9.5	33,000	16.0	82,000
3.6	7,130	6.2	17,610	10.0	35,750	16.5	87,400
3.8	7,890	6.4	18,470	10.5	38,650	17.0	93,000
4.0	8,650	6.6	19,340	11.0	41,700	17.5	99,000
4.2	9,430	6.8	20,220	11.5	44,900	18.0	105,000
4.4	10,210	7.0	21,100	12.0	48,300	19.0	117,400
4.6	11,000	7.2	22,000	12.5	51,900		

RATING TABLE FOR YADKIN RIVER NEAR SALISBURY, N. C., FOR 1902.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.7	1,350	4.4	10,240	7.2	22,000	13.0	55,700
1.8	1,580	4.6	11,000	7.4	22,900	13.5	59,700
2.0	2,120	4.8	11,800	7.6	23,810	14.0	63,700
2.2	2,720	5.0	12,600	7.8	24,730	14.5	67,900
2.4	3,320	5.2	13,420	8.0	25,650	15.0	72,400
2.6	3,940	5.4	14,240	8.5	28,000	15.5	77,150
2.8	4,580	5.6	15,070	9.0	30,400	16.0	82,000
3.0	5,220	5.8	15,910	9.5	33,000	16.5	87,400
3.2	5,900	6.0	16,750	10.0	35,750	17.0	93,000
3.4	6,580	6.2	17,610	10.5	38,650	17.5	99,000
3.6	7,280	6.4	18,470	11.0	41,700	18.0	105,000
3.8	8,000	6.6	19,340	11.5	44,900	19.0	117,400
4.0	8,720	6.8	20,220	12.0	48,300		
4.2	9,480	7.0	21,100	12.5	51,900		

RATING TABLE FOR YADKIN RIVER NEAR SALISBURY, N. C., FOR 1903.

1.6	1,500	2.9	5,350	4.2	9,670	6.0	16,750
1.7	1,740	3.0	5,670	4.3	10,020	6.2	17,610
1.8	1,990	3.1	5,990	4.4	10,370	6.4	18,470
1.9	2,260	3.2	6,310	4.5	10,720	6.6	19,340
2.0	2,540	3.3	6,640	4.6	11,080	6.8	20,220
2.1	2,830	3.4	6,970	4.7	11,450	7.0	21,100
2.2	3,130	3.5	7,300	4.8	11,830	7.5	23,350
2.3	3,440	3.6	7,630	4.9	12,210	8.0	25,650
2.4	3,750	3.7	7,960	5.0	12,600	9.0	30,400
2.5	4,070	3.8	8,300	5.2	13,410	10.0	35,750
2.6	4,390	3.9	8,640	5.4	14,230	11.0	41,700
2.7	4,710	4.0	8,980	5.6	15,070		
2.8	5,030	4.1	9,320	5.8	15,910		

Table well determined to 6 feet gage height. Above 5.6 feet table same as 1901 and 1902.

RATING TABLE FOR YADKIN RIVER NEAR SALISBURY, N. C., FOR 1904.

1.10	1,050	2.20	3,015	3.30	6,250	4.80	11,780
1.20	1,170	2.30	3,270	3.40	6,585	5.00	12,000
1.30	1,300	2.40	3,540	3.50	6,930	5.20	13,440
1.40	1,445	2.50	3,820	3.60	7,280	5.40	14,280
1.50	1,600	2.60	4,110	3.70	7,630	5.60	15,120
1.60	1,770	2.70	4,400	3.80	7,985	5.80	15,960
1.70	1,950	2.80	4,695	3.90	8,345	6.00	16,800
1.80	2,140	2.90	4,995	4.00	8,710	6.50	18,500
1.90	2,340	3.00	5,300	4.20	9,455		
2.00	2,550	3.10	5,610	4.40	10,220		
2.10	2,775	3.20	5,925	4.60	10,990		

The above table is applicable only for open-channel conditions. It is based upon 9 discharge measurements made during 1904 and 10 made during 1903. It is fairly well defined between gage heights 1.40 feet and 2.60 feet. The table has been extended below gage height 1.40 feet. Above gage height 5 feet the rating curve is a tangent, the difference being 420 per tenth.

STATION RATING TABLE FOR YADKIN RIVER NEAR SALISBURY, N. C., FOR 1905.

Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).
1.10	1,050	2.70	4,400	4.30	9,510	6.60	18,650
1.20	1,170	2.80	4,675	4.40	9,850	6.80	19,570
1.30	1,300	2.90	4,995	4.50	10,200	7.00	20,500
1.40	1,445	3.00	5,300	4.60	10,550	7.20	21,440
1.50	1,600	3.10	5,610	4.70	10,910	7.40	22,400
1.60	1,770	3.20	5,920	4.80	11,270	7.60	23,380
1.70	1,950	3.30	6,235	4.90	11,630	7.80	24,380
1.80	2,140	3.40	6,550	5.00	12,000	8.00	25,400
1.90	2,340	3.50	6,870	5.20	12,750	8.20	26,450
2.00	2,550	3.60	7,190	5.40	13,520	8.40	27,520
2.10	2,775	3.70	7,515	5.60	14,320	8.60	28,620
2.20	3,015	3.80	7,840	5.80	15,150	8.80	29,740
2.30	3,270	3.90	8,170	6.00	16,000	9.00	30,880
2.40	3,540	4.00	8,500	6.20	16,870	9.20	32,040
2.50	3,820	4.10	8,830	6.40	17,750	9.40	33,220
2.60	4,110	4.20	9,170				

NOTE.—The above table is applicable only for open-channel conditions. It is based on 26 discharge measurements made during 1901, 1904 and 1905. It is well defined between gage heights 1.4 feet and 6.2 feet. The table has been extended beyond these limits, being based on two measurements at 10.5 feet. Below 3 feet the table is the same as for 1904.

RATING TABLE FOR YADKIN RIVER NEAR SALISBURY, N. C., FOR 1906 AND 1907.

2.00	1,990	3.30	5,860	4.60	10,830	6.80	20,950
2.10	2,220	3.40	6,220	4.70	11,240	7.00	22,060
2.20	2,460	3.50	6,580	4.80	11,650	7.20	23,210
2.30	2,720	3.60	6,950	4.90	12,070	7.40	24,400
2.40	2,990	3.70	7,320	5.00	12,490	7.60	25,600
2.50	3,270	3.80	7,700	5.20	13,340	7.80	26,800
2.60	3,560	3.90	8,080	5.40	14,210	8.00	28,000
2.70	3,860	4.00	8,460	5.60	15,090	9.00	34,000
2.80	4,170	4.10	8,850	5.80	15,990	10.00	40,000
2.90	4,490	4.20	9,240	6.00	16,910	11.00	46,000
3.00	4,820	4.30	9,630	6.20	17,860	12.00	52,000
3.10	5,160	4.40	10,030	6.40	18,850		
3.20	5,510	4.50	10,430	6.60	19,880		

NOTE.—The above table is applicable only for open-channel conditions. It is based on discharge measurements made during 1901-1906. It is well defined between gage heights 2 feet and 11 feet. Above gage height 7.30 feet the rating curve is a tangent, the difference being 60.0 per tenth. Measurements made at the railroad bridge have been referred to the toll-bridge gage by means of a series of simultaneous readings. This table refers to the toll-bridge gage.

ESTIMATED MONTHLY DISCHARGE OF YADKIN RIVER NEAR SALISBURY, N. C.  
[Drainage area, 3,399 square miles.]

Discharge in Second-feet.					Run-off.	
Month.	Maxi- mum.	Mini- mum.	Mean.	Total in Acro-feet.	Depth in Inches.	Second- feet per Square Mile.
1895.						
October .....	1,500	1,400	1,426	87,681	0.48	0.42
November .....	4,020	1,310	2,004	119,246	0.65	0.59
December .....	10,160	1,640	2,683	164,971	0.91	0.79
1896.						
January .....	10,940	1,640	4,485	275,774	1.52	1.32
February .....	24,200	2,320	7,817	449,638	2.48	2.30
March .....	5,380	2,320	3,472	213,485	1.18	1.02
April .....	29,200	2,660	5,242	311,920	1.72	1.54
May .....	6,060	1,310	2,507	154,149	0.85	0.74
June .....	9,460	1,310	3,159	187,974	1.03	0.93
July .....	64,200	1,640	11,584	712,277	3.94	3.41
August .....	6,060	1,000	2,411	148,248	0.82	0.71
September .....	32,200	1,000	3,087	183,689	1.01	0.91
October .....	31,200	1,310	3,122	191,965	1.06	0.92
November .....	23,200	1,980	5,206	309,779	1.65	1.48
December .....	22,700	3,000	6,037	371,202	2.05	1.78
The year .....	64,200	1,000	4,844	3,510,100	19.31	1.42
1897.						
January .....	12,044	2,600	4,039	248,350	1.37	1.19
February .....	23,924	4,652	11,597	644,065	3.45	3.41
March .....	25,068	4,652	10,522	646,970	3.58	3.10
April .....	31,756	3,948	7,761	461,810	2.54	2.28
May .....	14,156	3,250	5,776	355,150	1.96	1.70
June .....	19,788	2,300	5,652	336,320	1.85	1.66
July .....	11,692	2,600	4,821	296,430	1.64	1.42
August .....	5,708	1,760	2,943	180,960	1.00	0.87
September .....	3,250	900	1,785	106,215	0.59	0.53
October .....	25,772	900	3,557	218,600	1.21	1.05
November .....	7,116	900	2,708	161,140	0.89	0.80
December .....	5,708	2,300	3,086	189,750	1.05	0.91
The year .....	34,924	900	5,354	3,845,760	21.13	1.58
1898.						
January .....	9,280	2,100	3,460	212,747	1.18	1.02
February .....	2,850	1,400	1,957	108,686	0.60	0.58
March .....	13,820	1,725	3,119	191,780	1.06	0.92
April .....	10,645	1,550	2,977	177,144	0.98	0.88
May .....	12,058	1,550	2,928	180,036	0.99	0.86
June .....	2,567	1,400	1,855	110,380	0.61	0.55
July .....	10,450	1,100	3,178	195,408	1.08	0.94
August .....	12,880	1,725	5,185	318,813	1.76	1.53
September .....	79,998	1,400	8,297	493,706	2.72	2.44
October .....	16,550	1,725	4,411	271,222	1.50	1.30
November .....	4,800	1,725	2,211	131,564	0.72	0.65
December .....	12,645	1,550	3,257	200,265	1.10	0.96
The year .....	79,998	1,100	3,569	2,591,751	14.30	1.05



ESTIMATED MONTHLY DISCHARGE OF YADKIN RIVER NEAR SALISBURY, N. C.—Continued.

[Drainage area, 3 399 square miles.]

Month.	Discharge in Second-feet.			Total in Acre-feet.	Run-off.	
	Maxi-mum.	Mini-mum.	Mean.		Second-feet per Square Mile.	Depth in Inches.
1899.						
January.....	46,600	2,500	8,548	525,596	2.51	2.90
February.....	45,800	3,100	13,443	746,586	3.95	4.11
March.....	107,400	6,900	23,899	1,469,492	7.03	8.10
April.....	27,700	6,500	9,825	584,628	2.89	3.22
May.....	11,300	4,000	6,211	381,899	1.83	2.11
June.....	12,900	3,100	4,823	286,988	1.42	1.58
July.....	10,900	2,250	3,703	227,689	1.09	1.26
August.....	5,000	1,450	2,356	144,865	0.69	0.79
September.....	10,500	1,450	2,495	148,463	0.73	0.81
October.....	5,700	1,600	2,226	136,871	0.65	0.75
November.....	3,700	1,800	2,120	126,149	0.62	0.69
December.....	8,900	1,800	2,716	167,000	0.80	0.92
The year.....	107,400	1,450	6,864	4,946,226	2.02	27.24
1900.						
January.....	15,250	1,430	4,257	261,753	1.25	1.44
February.....	37,800	1,430	7,029	390,371	2.07	2.15
March.....	40,500	4,080	9,182	564,579	2.70	3.12
April.....	48,298	2,250	8,679	516,436	2.55	2.84
May.....	8,450	2,500	3,331	204,815	0.98	1.13
June.....	24,060	3,000	6,190	368,331	1.82	2.03
July.....	5,945	2,060	3,332	204,877	0.98	1.13
August.....	5,112	1,870	2,415	148,493	0.71	0.82
September.....	12,570	1,625	2,769	164,767	0.81	0.90
October.....	22,830	2,060	3,750	230,578	1.10	1.27
November.....	29,435	2,625	4,417	262,830	1.30	1.45
December.....	21,915	3,125	5,138	315,923	1.51	1.74
The year.....	48,298	1,430	5,041	3,633,753	1.48	20.02

Month.	Discharge in Second-feet.			Second-feet per Square Mile.	Run-off.	
	Maxi-mum.	Mini-mum.	Mean.		Second-feet per Square Mile.	Depth in Inches.
1901.						
January.....	31,180	2,925	5,284	1.55	1.79	
February.....	6,195	2,420	3,507	1.03	1.07	
March.....	37,780	2,585	5,922	1.74	2.01	
April.....	81,030	4,180	13,787	4.06	4.53	
May.....	70,870	4,000	11,152	3.28	3.78	
June.....	32,220	4,540	10,950	3.22	3.59	
July.....	29,200	3,820	8,455	2.49	2.87	
August.....	44,132	3,640	16,503	4.86	5.60	
September.....	16,120	4,360	6,764	1.99	2.22	
October.....	13,420	3,640	5,116	1.51	1.74	
November.....	6,380	3,100	3,683	1.08	1.20	
December.....	104,640	3,280	12,506	3.68	4.24	
The year.....	104,640	2,420	8,636	2.54	34.64	

ESTIMATED MONTHLY DISCHARGE OF YADKIN RIVER NEAR SALISBURY, N. C.—*Continued.*  
 [Drainage area, 3,399 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maxi- mum.	Mini- mum.	Mean.	Second- feet per Square Mile.	Depth in Inches.
1902.					
January.....	8,360	3,780	5,678	1.67	1 93
February.....	27,295	4,580	8,763	2.58	2 60
March.....	32,740	5,390	9,759	2.87	3 31
April.....	9,480	4,900	6,031	1.77	1 97
May.....	5,900	3,470	4,530	1.33	1 53
June.....	55,700	2,570	7,700	2.27	2 53
July.....	5,220	1,980	2,974	0.88	1 01
August.....	9,670	1,465	3,108	0.91	1 05
September.....	10,620	1,580	2,871	0.84	0 94
October.....	10,810	1,350	3,512	1.03	1 19
November.....	12,200	2,120	3,833	1.13	1 26
December.....	16,750	3,940	7,273	2.14	2 47
The year.....	55,700	1,350	5,502	1.62	21 88
1903.					
January.....	38,070	3,750	8,421	2.48	2 86
February.....	38,650	5,030	12,677	3.73	3 88
March.....	76,200	6,475	15,798	4.65	5 36
April.....	39,565	6,475	12,174	3.58	3 99
May.....	10,370	4,230	5,393	1.59	1 83
June.....	32,480	3,910	7,446	2.19	2 44
July.....	7,960	1,865	3,872	1.14	1 31
August.....	12,600	1,865	4,744	1.40	1 61
September.....	21,100	1,865	4,343	1.28	1 43
October.....	8,300	1,620	2,536	.75	.86
November.....	5,350	1,740	2,542	.75	.84
December.....	4,350	1,500	2,260	.66	.76
The year.....	76,200	1,500	6,850	2.02	27 17
1904.					
January.....	4,110	1,300	2,226	0.655	.755
February.....	13,020	2,026	4,151	1.22	1 32
March.....	13,440	2,445	4,177	1.23	1 34
April.....	3,405	1,950	2,370	.697	.778
May.....	19,320	1,950	3,521	1.04	1 20
June.....	18,270	1,860	4,770	1.40	1 56
July.....	12,810	1,685	3,624	1.07	1 23
August.....	11,987	1,860	4,434	1.30	1 50
September.....	5,768	1,372	2,376	.699	.790
October.....	1,372	1,050	1,268	.373	.430
November.....	2,775	1,372	1,931	.568	.634
December.....	5,455	1,523	2,630	.774	.892
The year.....	19,320	1,050	2,873	.919	12 42

ESTIMATED MONTHLY DISCHARGE OF YADKIN RIVER NEAR SALISBURY, N. C.—Continued.  
[Drainage area, 3,399 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maxi- mum.	Mini- mum.	Mean.	Second- feet per Square Mile.	Depth in Inches.
1905.					
January.....	16,000	1,235	4,007	1.18	1.36
February.....	27,520	1,950	7,107	2.09	2.18
March.....	5,300	2,445	3,447	1.01	1.16
April.....	12,750	2,140	4,153	1.22	1.36
May.....	14,320	2,240	5,977	1.76	2.03
June.....	4,110	1,685	2,332	.686	.765
July.....	33,820	1,770	7,835	2.31	2.66
August.....	22,890	2,340	6,678	1.97	2.27
September.....	4,995	1,770	2,381	.700	.781
October.....	7,190	1,600	2,221	.653	.753
November.....	2,045	1,685	1,818	.535	.597
December.....	31,460	1,770	6,513	1.92	2.21
The year.....	33,820	1,235	4,539	1.34	18.13
1903.					
January.....	34,600	2,990	10,300	3.03	3.49
February.....	6,760	3,130	4,190	1.23	1.28
March.....	14,600	3,270	6,020	1.77	2.04
April.....	11,600	2,590	4,630	1.36	1.52
May.....	6,760	2,340	3,490	1.02	1.18
June.....	16,400	2,340	6,230	1.83	2.04
July.....	21,500	2,720	7,540	2.22	2.56
August.....	51,400	3,420	10,900	3.21	3.70
September.....	38,800	4,170	7,630	2.24	2.50
October.....	36,400	4,010	7,700	2.26	2.61
November.....	31,000	4,010	6,140	1.81	2.02
December.....	6,580	3,270	4,720	1.39	1.60
The year.....	51,400	2,340	6,620	1.95	26.54

MONTHLY DISCHARGE OF YADKIN RIVER AT PIEDMONT TOLL BRIDGE, NEAR SALISBURY, N. C.

Month.	Discharge in Second-feet.			Run-off.	
	Maxi- mum.	Mini- mum.	Mean.	Per Square Mile.	Depth in Inches on Drainage Area.
1907.					
January.....	23,200	3,420	5,410	1.59	1.83
February.....	6,950	3,420	4,020	1.18	1.23
March.....	8,080	3,270	5,010	1.47	1.70
April.....	13,300	3,560	5,640	1.66	1.85
May.....	5,160	2,720	3,640	1.07	1.23
June.....	21,500	3,270	7,140	2.10	2.34
July.....	8,460	2,720	4,130	1.21	1.40
August.....	6,220	2,220	3,310	.974	1.12
September.....	28,000	1,880	3,980	1.17	1.30
October.....	3,860	1,960	2,580	.759	0.88
November.....	22,100	2,460	4,850	1.43	1.60
December.....	38,800	2,860	8,620	2.54	2.93
The year.....	38,800	1,880	4,860	1.43	19.41

## YADKIN RIVER AT SILOAM, N. C.

This station was established on August 2, 1900, and was located at a ferry across the river at Siloam, a small station on the Wilkesboro branch of the Southern Railway, the measurements being made from the ferryboat. The gage rod was nailed to a tree about 50 yards above the ferry, and was referred to a bench mark on the south bank. This bench mark is a notch cut in the outermost of a group of three sycamore trees standing at the water's edge, about 25 feet above the ferry landing, the notch being about 8 feet from the ground.

When the gage was established the reading was 2.7 feet, and the water level stood 9.6 feet below the bench mark. This gage was washed away by a freshet on September 16, and was not replaced until October 1. The zero of the second gage was made to read 1 foot below the reading of the original gage.

The gage heights printed herewith have been adjusted to the gage as originally established.

The station was abandoned on December 31, 1901.

## DISCHARGE MEASUREMENTS OF YADKIN RIVER AT SILOAM, N. C.

Date.	Hydrographer.	Gage Height (Feet).	Discharge (Second feet).
1900.			
July 11	N. C. Curtis	2.90	1,367
Aug. 3	do	2.60	1,218
Oct. 31	do	3.10	1,469
1901.			
Apr. 15	N. C. Curtis	5.00	5,237

## WATER-POWERS OF NORTH CAROLINA.

RATING TABLE FOR YADKIN RIVER, AT SILOAM, N. C., FOR 1900-1901.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.7	850	4.3	3,450	6.9	10,180	9.5	16,940
1.8	870	4.4	3,700	7.0	10,440	9.6	17,200
1.9	900	4.5	3,950	7.1	10,700	9.7	17,460
2.0	930	4.6	4,200	7.2	10,960	9.8	17,720
2.1	975	4.7	4,460	7.3	11,220	9.9	17,980
2.2	1,020	4.8	4,720	7.4	11,480	10.0	18,240
2.3	1,070	4.9	4,980	7.5	11,740	10.1	18,500
2.4	1,120	5.0	5,240	7.6	12,000	10.2	18,760
2.5	1,170	5.1	5,500	7.7	12,260	10.3	19,020
2.6	1,220	5.2	5,760	7.8	12,520	10.4	19,280
2.7	1,270	5.3	6,020	7.9	12,780	10.5	19,540
2.8	1,320	5.4	6,280	8.0	13,040	10.6	19,800
2.9	1,370	5.5	6,540	8.1	13,300	10.7	20,060
3.0	1,420	5.6	6,800	8.2	13,560	10.8	20,320
3.1	1,470	5.7	7,060	8.3	13,820	10.9	20,580
3.2	1,540	5.8	7,320	8.4	14,080	11.0	20,840
3.3	1,630	5.9	7,580	8.5	14,340	11.1	21,100
3.4	1,740	6.0	7,840	8.6	14,600	11.2	21,360
3.5	1,880	6.1	8,100	8.7	14,860	11.3	21,620
3.6	2,020	6.2	8,360	8.8	15,120	11.4	21,880
3.7	2,180	6.3	8,620	8.9	15,380	11.5	22,140
3.8	2,350	6.4	8,880	9.0	15,640	11.6	22,400
3.9	2,540	6.5	9,140	9.1	15,900	11.7	22,660
4.0	2,740	6.6	9,400	9.2	16,160	11.8	22,920
4.1	2,960	6.7	9,660	9.3	16,420	11.9	23,180
4.2	3,200	6.8	9,920	9.4	16,680	12.0	23,440

ESTIMATED MONTHLY DISCHARGE OF YADKIN RIVER AT SILOAM, N. C.  
[Drainage area, 1,219 square miles.]

Month.	Discharge in Second-feet.			Run-off.		Rainfall.
	Maximum.	Minimum.	Mean.	Second-feet per Square Mile.	Depth in Inches.	Inches.
1900.						
August 3 to 31.....			1,031	0.85	0.91	2.56
September 1 to 15.....			937	.77	.44	3.52
October.....	22,660	1,220	2,295	1.88	2.17	5.62
November.....	22,920	1,370	3,994	3.28	3.65	.....
December.....	2,180	1,470	1,538	1.26	1.45	4.11
1901.						
January.....	4,200	1,540	1,738	1.43	1.65	3.18
February.....	1,740	1,470	1,614	1.32	1.38	1.45
March.....	20,580	1,470	2,970	2.40	2.77	5.11
April 1 to 19*.....			1,762	1.45	1.08	8.04
May.....	29,940	3,950	5,864	4.81	5.54	7.69
June.....	23,180	3,950	10,329	8.47	9.45	7.79
July.....	14,600	4,200	5,601	4.59	5.29	5.37
August.....	25,000	4,200	8,552	7.02	8.03	17.05
September.....	4,720	4,200	4,295	3.52	3.93	3.98
October.....	4,720	4,200	4,242	3.48	4.01	1.01
November.....	4,720	4,200	4,235	3.47	3.88	1.15
December.....	25,780	4,200	7,211	5.92	6.82	9.94
The year.....	29,940	1,470	4,868	3.99	53.89	71.76

\*Gage washed out by flood April 20.

## DISCHARGE MEASUREMENTS OF YADKIN RIVER AT NORTH WILKESBORO, N. C., IN 1903.

Date.	Hydrographer.	Gage Height (Feet).	Discharge (Second-feet).
Apr. 10	E. W. Myers.....	4.00	2,969
Apr. 11	do.....	3.67	2,797
June 16	do.....	1.56	977
June 16	do.....	1.56	1,005
June 17	do.....	1.46	965
July 16	B. S. Drane.....	1.15	865
July 16	do.....	1.17	830
Aug. 24	do.....	.76	675
Aug. 24	do.....	.73	650
Aug. 25	do.....	.71	630
Oct. 2	do.....	.41	509
Oct. 2	do.....	.40	479
Oct. 3	do.....	.37	491
Nov. 6	do.....	.71	691
Nov. 6	do.....	.71	693

## DISCHARGE MEASUREMENTS OF YADKIN RIVER AT NORTH WILKESBORO, N. C.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second-feet).
1904.						
Mar. 11	B. S. Drane.....	95	434	2.30	1.17	1,000
Mar. 12	do.....	95	399	2.26	.92	903
Apr. 18	do.....	93	308	1.87	.31	574
Apr. 19	do.....	93	306	1.88	.26	575
June 8	do.....	96	396	2.54	1.24	1,004
June 8	do.....	96	396	2.55	1.22	1,009
Sept. 22	do.....	93	218	2.13	.09	465
Sept. 22	do.....	93	218	1.96	.09	428
Dec. 21	do.....	92	229	2.13	.07	452
Dec. 21	do.....	92	226	2.06	.03	432
1905.						
Jan. 3	B. S. Drane.....	93	290	2.15	0.30	580
Jan. 4	do.....	92	252	1.98	.00	465
Apr. 25	do.....	94	306	1.94	.34	593
Apr. 26	do.....	94	313	2.04	.50	638
Aug. 22	do.....	95	319	2.58	1.02	824
Aug. 23	do.....	96	330	2.66	1.23	878
Sept. 19	do.....	94	272	2.09	.53	567
1906.						
June 19	W. E. Hall.....	101	629	----	3.00	2,300
June 19	do.....	101	619	----	2.94	2,260
1907.						
Mar. 27	Warren E. Hall.....	97	363	2.50	1.33	909
Sept. 4	Frank P. Thomas.....	93	209	2.17	0.90	584

MEAN DAILY GAGE HEIGHT, IN FEET, OF YADKIN RIVER AT NORTH WILKESBORO, N. C., FOR 1903.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....		2.25	1.75	1.35	2.25	1.85	0.40	0.40	0.30
2.....		2.20	1.85	1.25	1.20	.85	.40	.40	.40
3.....		2.20	2.15	1.40	1.40	.80	.40	.40	.40
4.....		2.30	1.70	1.25	1.90	.70	.35	.50	.40
5.....		2.20	2.45	3.15	1.50	.70	.35	1.80	.40
6.....		2.10	6.75	2.25	1.20	.60	.35	.75	.30
7.....		2.10	4.45	2.15	1.00	.60	.70	.55	.35
8.....		2.05	3.05	1.55	.85	.60	7.20	.50	.35
9.....		2.00	2.45	1.40	.85	.55	1.35	.50	.30
10.....	3.95	1.95	3.20	1.30	.80	.90	.80	.50	.35
11.....	3.65	1.95	2.35	1.20	1.35	.65	.60	.45	.30
12.....	3.35	1.90	2.25	1.50	.90	.55	.55	.45	.30
13.....	4.25	1.90	1.95	2.05	.80	.50	.50	.45	.45
14.....	3.85	2.15	1.85	1.60	.95	.50	.50	.40	.35
15.....	3.80	1.90	1.80	1.30	1.80	.45	.45	.35	.30
16.....	3.40	1.85	1.65	1.20	1.25	.60	.60	.40	.15
17.....	3.15	1.75	1.45	1.35	1.75	2.45	1.55	.90	.25
18.....	3.00	1.75	1.45	1.20	1.65	.95	1.20	1.15	.15
19.....	2.95	1.65	1.40	1.05	1.25	.75	.80	.60	.05
20.....	2.85	1.65	1.40	1.05	1.15	.65	.65	.50	.90
21.....	2.80	1.65	1.35	.95	1.00	.60	.55	.50	.95
22.....	2.70	1.60	1.30	.95	.90	.55	.50	.45	.55
23.....	2.65	1.55	1.30	.90	.80	.55	.55	.45	.40
24.....	2.50	1.50	1.45	.85	.80	.55	.50	.45	.40
25.....	2.60	2.00	1.75	.85	.75	.50	.45	.40	.45
26.....	2.60	1.60	1.65	.80	.70	.50	.45	.40	.55
27.....	2.45	1.65	1.80	.75	.60	.50	.40	.30	.10
28.....	2.35	1.70	1.95	.75	.60	.50	.35	.25	.55
29.....	2.30	1.70	1.95	1.10	.55	.40	.40	.40	.35
30.....	2.30	2.00	1.45	.90	1.10	.40	.40	.40	.30
31.....		1.85		1.20	.80		.40		.30

MEAN DAILY GAGE HEIGHT, IN FEET, OF YADKIN RIVER AT NORTH WILKESBORO, N. C., FOR 1904.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	0.30	*0.40	0.85	0.60	0.20	4.60	2.50	1.25	0.50	0.00	-0.05	-0.05
2.....	.30	-‡.20	.80	.50	.20	2.70	1.25	1.20	.70	.00	-.05	-.05
3.....	.30	*.40	.70	.45	1.30	1.75	.90	1.35	.45	.00	-.05	.20
4.....	-‡.05	‡.20	.65	.40	2.20	1.40	.75	.70	.40	-.05	.25	.10
5.....	-‡.05	‡.20	.50	.35	1.10	1.10	1.00	.95	2.40	.05	1.30	.10
6.....	.10	*.50	.40	.30	.90	2.15	1.15	1.50	.85	.00	.25	1.30
7.....	.40	.50	7.50	.50	.90	1.45	.80	.75	.60	.00	.00	.40
8.....	.20	1.95	3.70	.50	1.10	1.50	1.35	2.25	.50	.00	.00	.20
9.....	.20	.85	2.10	1.05	2.90	.95	.70	1.20	.45	-.05	.00	.10
10.....	.25	.60	1.50	.55	2.20	.95	1.20	2.15	.40	-.10	.00	.10
11.....	.25	.55	1.20	.50	1.60	1.50	.70	1.60	.40	-.10	-.05	.10
12.....	.30	.45	.90	.40	1.20	1.10	.85	1.20	.45	-.10	.05	.05
13.....	.30	.30	.75	.35	.95	.85	.55	.95	.40	-.10	.60	.00
14.....	.30	.40	.80	.30	.75	.70	.40	.90	.55	-.10	.75	-.10
15.....	*.00	.35	.70	.25	.90	.65	.40	1.70	.30	-.10	.20	.00
16.....	‡.20	.30	.55	.20	.60	.65	.40	1.60	.20	-.10	.10	.00
17.....	.25	.10	.50	.25	.50	1.95	.60	.75	.20	-.10	.00	.10
18.....	.05	.30	.50	.25	9.80	.90	.35	.50	.10	-.10	.00	.10
19.....	-.05	.30	.50	.25	3.40	.90	.25	.40	.10	-.10	.00	-.10
20.....	-.20	.45	.45	.20	2.00	1.00	.20	1.05	.10	-.10	.00	-.10
21.....	‡.30	.30	.55	.20	1.40	.75	.20	1.20	.10	-.10	.00	.10
22.....	.35	2.35	.80	.20	1.10	.70	.20	1.25	.10	-.10	.00	-.05
23.....	.20	1.90	.65	.20	.90	.50	.20	.75	.00	-.15	.00	-.05
24.....	.90	1.15	1.60	.20	.75	.45	.30	4.50	.00	-.15	.00	.00
25.....	.60	.80	1.25	.20	.90	.40	1.60	1.40	.00	-.15	-.10	.10
26.....	.50	.70	1.00	.65	.90	.50	1.20	1.05	.10	-.15	-.10	.05
27.....	.35	.80	1.10	.65	.60	.55	.45	.80	.10	-.05	-.10	.30
28.....	.35	.90	.85	.40	.50	4.80	.95	.65	.05	-.05	-.10	1.70
29.....	*.25	.90	.70	.30	.40	2.60	6.70	.60	.05	-.05	-.10	.60
30.....	*.10	.....	.60	.25	.80	1.65	1.35	.50	.00	-.06	-.06	.15
31.....	*.10	.....	.60	.....	1.70	.....	.85	.45	.....	-.06	.....	.25

\*Freeze.

‡Thaw.



MEAN DAILY GAGE HEIGHT, IN FEET, OF YADKIN RIVER AT NORTH WILKESBORO, N. C., FOR  
 1905 AND 1906.

1905.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	0.25	0.2	1.3	0.35	0.3	0.3	0.75	0.4	0.6	0.2	0.2	0.15
2.....	.21	.2	1.3	.35	.25	.25	.9	.3	.7	.2	.2	.15
3.....	.25	.1	1.15	.3	.3	.25	3.1	.35	.75	.2	.2	5.1
4.....	.05	— .15	1.0	.3	.8	.2	.8	1.1	6.9	.4	.2	1.4
5.....	.15	.0	1.0	.4	.4	.2	.6	1.4	1.7	.25	.2	.7
6.....	.3	— .2	.95	1.1	.8	.15	1.65	.7	1.1	.2	.2	.5
7.....	2.0	.2	.85	.65	2.65	.1	.7	.55	.9	.2	.2	.5
8.....	.55	.3	.75	.5	1.2	.15	.4	2.75	.75	.2	.2	.4
9.....	.15	.1	.75	.4	.8	.05	.45	4.0	.65	.2	.2	3.6
10.....	.5	.2	1.4	.5	.6	.0	.3	3.0	.6	.2	.2	2.7
11.....	.35	.3	1.2	.45	1.35	.0	.5	2.4	.6	3.8	.2	1.4
12.....	4.2	.4	1.05	3.8	.65	.0	8.6	4.3	.6	1.05	.2	.95
13.....	3.2	2.1	1.1	2.15	1.3	.0	12.50	2.8	.6	.5	.2	.8
14.....	1.7	.8	.85	1.8	3.6	.0	6.6	2.6	.5	.35	.2	.7
15.....	.9	.55	.75	1.3	1.9	.0	3.5	1.85	.5	.3	.2	.95
16.....	.4	.2	.65	1.15	4.1	.25	3.5	2.2	.5	.25	.2	1.7
17.....	.4	.55	.6	.85	3.0	.4	1.9	1.5	.65	.25	.2	1.2
18.....	.5	.15	.55	.7	1.9	.4	1.4	1.3	.5	.25	.2	1.05
19.....	.45	.3	.55	.6	1.4	2.4	1.45	1.25	.5	.25	.2	.9
20.....	.3	.65	.5	.6	1.1	1.65	.95	1.15	.5	.25	.25	.85
21.....	.3	3.7	.65	.5	.85	.8	.8	1.1	.45	.25	.25	8.1
22.....	.25	3.4	.6	.5	.75	.5	.9	1.15	.4	.2	.2	2.85
23.....	.2	3.4	.45	.4	.9	.5	.8	.9	.3	.2	.1	1.95
24.....	.1	2.5	.5	.4	.75	1.1	.65	1.0	.3	.2	.1	1.7
25.....	— .15	2.0	.7	.35	.55	.65	.65	1.0	.25	.25	.15	1.35
26.....	— .6	1.8	.5	.4	.7	.4	.5	1.6	.2	.65	.15	1.1
27.....	.2	1.55	.6	.85	1.0	.3	.4	.9	.2	.4	.15	.95
28.....	.45	1.35	.4	.5	.6	.15	.5	.75	.2	.3	.15	.9
29.....	.3		.4	.4	.55	.1	1.15	.65	.2	.25	.15	1.1
30.....	.25		.5	.4	.65	.5	1.05	.65	.2	.25	.15	.85
31.....	.2		.5		.45		.6			.25		.7
1906.												
1.....	0.65	2.35	1.1	2.95	1.15	0.65	1.1	3.7	4.6	3.8	2.45	2.35
2.....	.65	2.1	1.0	2.35	1.25	1.2	1.0	4.3	3.6	3.7	2.4	2.35
3.....	4.6	1.75	1.15	2.0	1.15	.75	1.1	3.2	3.1	7.0	2.4	2.3
4.....	5.8	1.5	4.3	1.8	1.5	.65	2.0	2.6	2.9	7.0	2.35	2.25
5.....	2.85	1.65	2.5	1.65	1.8	1.4	1.15	2.2	2.9	5.1	2.3	2.2
6.....	2.0	1.6	1.9	1.6	1.25	3.1	3.0	1.9	2.6	4.3	2.3	2.2
7.....	1.5	1.45	1.65	1.45	4.8	1.4	1.55	1.9	2.85	3.7	2.2	2.2
8.....	1.35	1.35	1.6	1.4	1.9	1.05	1.15	1.7	2.4	3.3	2.2	2.1
9.....	1.2	1.35	1.45	1.35	1.5	1.3	2.4	1.5	2.25	3.0	2.2	2.1
10.....	.95	1.25	1.3	1.65	1.3	1.4	1.45	1.4	2.1	3.0	2.1	2.1
11.....	.95	1.2	1.15	1.3	1.2	2.5	1.15	1.5	2.0	2.75	2.1	2.7
12.....	3.1	1.25	1.15	1.25	1.1	1.2	1.05	1.25	2.0	2.65	2.2	2.2
13.....	2.2	1.25	1.1	1.2	1.05	2.1	1.05	1.85	2.35	2.6	2.1	2.1
14.....	3.1	1.2	1.1	1.2	1.0	6.3	.95	2.15	2.15	2.5	2.0	2.1
15.....	2.6	1.15	2.7	4.2	.9	7.4	2.3	6.2	1.9	2.4	2.15	2.0
16.....	2.2	1.1	2.8	2.4	.85	5.5	5.0	4.0	1.9	2.4	2.1	2.0
17.....	1.8	1.0	2.0	1.9	.85	4.7	2.25	3.7	1.85	2.6	2.05	2.1
18.....	1.6	1.0	1.6	1.65	.8	3.8	2.5	3.7	1.85	2.9	2.85	2.4
19.....	1.45	1.0	1.65	1.55	.9	3.4	1.9	3.0	3.8	17.9	18.8	2.1
20.....	1.3	1.0	2.9	1.45	.8	2.6	1.65	2.4	2.9	7.9	7.0	2.5
21.....	1.2	1.0	2.2	1.4	.75	2.0	1.95	3.5	2.6	4.9	4.6	2.35
22.....	1.4	1.75	1.9	1.35	.7	2.7	3.0	3.3	2.65	4	3.8	2.2
23.....	12.3	1.15	1.6	1.35	.7	1.7	2.25	3.3	2.9	3.6	3.3	2.15
24.....	5.0	1.1	1.5	1.2	.7	1.6	2.6	2.4	3.2	3.3	3.0	2.0
25.....	3.3	1.1	1.5	1.15	.65	2.6	4.4	2.1	2.35	3.15	2.8	1.5
26.....	2.8	1.1	1.5	1.15	.75	1.7	2.1	2.15	2.15	3.0	2.75	1.7
27.....	3.3	1.1	1.5	1.15	1.95	1.4	2.6	2.35	2.75	2.9	2.55	1.9
28.....	4.0	1.15	1.5	1.15	1.3	1.25	2.3	3.4	3.0	2.75	2.65	1.9
29.....	3.6		1.45	1.05	.9	1.25	1.75	18.0	6.6	2.65	2.45	2.1
30.....	2.9		4.6	1.6	.75	1.25	2.95	9.2	4.4	2.6	2.35	2.0
31.....	2.6		4.3		.7		2.35	7.2		2.55		7.6

MEAN DAILY GAGE HEIGHT, IN FEET, OF YADKIN RIVER AT NORTH WILKESBORO, N. C., FOR 1907.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	4.60	1.60	2.00	1.90	1.85	8.90	1.65	1.15	0.60	0.90	0.45	0.90
2.....	3.30	1.65	3.10	1.35	1.85	8.70	1.60	1.00	0.60	0.85	0.95	0.80
3.....	2.90	1.60	2.55	1.30	1.85	4.30	1.50	0.90	0.65	0.80	1.00	0.80
4.....	2.70	1.55	2.00	1.25	1.85	3.00	2.55	0.95	0.90	0.80	0.70	0.75
5.....	2.50	1.85	1.80	1.25	1.70	2.40	2.00	0.85	0.80	0.90	0.60	0.70
6.....	2.40	1.70	1.70	1.85	1.60	2.00	1.70	0.90	0.70	0.70	0.60	0.60
7.....	2.30	1.55	1.60	2.95	1.65	1.75	1.50	0.95	0.60	0.65	0.60	0.60
8.....	2.20	1.50	1.90	2.10	1.65	1.90	1.30	1.00	0.90	0.70	0.50	0.60
9.....	2.20	1.50	1.75	2.10	1.45	1.70	1.30	1.00	0.80	0.60	0.55	1.05
10.....	2.10	1.50	1.90	1.80	1.45	1.65	1.30	1.20	0.70	0.55	0.75	3.40
11.....	2.10	1.50	2.40	1.70	1.45	4.00	1.20	0.90	1.15	0.50	0.80	2.20
12.....	2.10	1.50	2.10	1.60	1.35	2.30	1.20	1.25	0.90	0.50	0.65	1.55
13.....	2.00	1.50	1.90	1.60	1.30	2.10	1.60	1.00	0.70	0.50	0.70	1.30
14.....	2.00	1.50	1.85	1.50	1.30	2.90	1.40	1.10	0.60	0.50	0.60	4.90
15.....	1.95	1.45	2.10	1.40	1.30	2.15	1.45	0.80	0.60	0.50	0.60	3.40
16.....	1.95	1.40	1.75	1.40	1.30	1.80	1.30	0.75	0.65	0.50	0.55	2.40
17.....	1.95	1.40	1.65	1.40	1.30	1.65	1.30	1.05	0.60	0.50	0.50	1.90
18.....	1.90	1.40	1.65	1.40	1.20	1.50	2.30	1.60	0.80	0.50	0.65	1.65
19.....	1.90	1.40	1.65	1.60	1.20	1.45	2.30	1.10	0.60	0.50	0.80	1.55
20.....	1.85	1.40	1.60	1.45	1.20	1.90	1.35	0.90	0.55	0.50	0.60	1.30
21.....	1.85	1.40	1.50	1.30	1.20	1.50	1.15	0.80	0.50	0.45	1.50	1.20
22.....	1.85	1.30	1.40	1.30	1.15	1.50	1.10	0.90	0.60	0.50	1.40	1.10
23.....	1.70	1.30	1.40	3.50	1.10	1.60	1.05	1.10	9.40	0.50	1.85	8.60
24.....	1.70	1.30	1.35	2.40	1.10	2.10	1.05	1.25	3.20	0.50	4.00	3.70
25.....	1.70	1.65	1.35	2.00	1.20	1.60	1.30	0.90	1.80	0.50	2.05	2.55
26.....	1.75	2.10	1.30	1.75	1.20	1.75	1.00	0.90	1.30	0.50	1.50	2.10
27.....	1.65	1.75	1.30	4.40	1.50	1.35	1.00	0.80	1.10	0.65	1.20	1.80
28.....	1.65	1.75	1.30	2.70	1.15	2.20	0.95	0.75	1.20	0.75	1.10	1.65
29.....	1.60	-----	1.30	2.30	1.05	3.60	1.10	0.75	1.55	0.50	1.10	1.50
30.....	1.60	-----	1.25	2.00	1.05	2.25	1.45	0.75	1.10	0.45	0.90	4.10
31.....	1.60	-----	1.20	-----	1.20	-----	1.05	0.70	-----	0.45	-----	3.30

MEAN DAILY GAGE HEIGHT, IN FEET, OF YADKIN RIVER AT NORTH WILKESBORO, N. C., FOR 1908.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1.....	2.4	1.3	2.6	1.8	2.3	1.25	1.4	1.5	1.55	.9
2.....	2.05	1.05	2.5	3.0	2.0	1.2	1.25	1.25	1.45	.8
3.....	1.85	0.8	2.5	2.2	1.9	1.2	2.35	1.2	1.3	.8
4.....	1.75	1.2	2.4	1.95	1.8	3.0	3.4	1.1	1.25	.8
5.....	2.05	1.3	2.4	1.8	1.8	1.8	5.1	1.3	1.3	.8
6.....	1.7	1.35	2.5	1.85	1.7	1.55	3.85	2.8	2.0	.8
7.....	2.8	1.45	2.35	1.7	3.8	1.5	3.35	2.8	2.15	.75
8.....	2.6	1.4	2.2	1.7	2.7	1.4	3.05	1.5	1.85	.75
9.....	2.1	1.4	2.1	1.6	2.3	1.35	2.5	1.45	1.3	1.2
10.....	1.8	1.3	2.0	1.6	2.1	1.4	2.1	1.3	1.2	2.85
11.....	1.85	1.65	1.95	1.55	1.9	1.7	1.8	1.2	1.15	1.5
12.....	9.2	4.8	2.25	1.5	1.8	1.8	1.6	1.1	1.1	1.15
13.....	4.4	7.4	2.2	1.4	1.7	1.7	2.15	1.0	1.05	1.0
14.....	3.2	6.9	1.9	1.4	1.6	1.5	1.7	1.05	1.05	.95
15.....	2.5	12.9	1.85	2.05	1.55	3.2	1.5	1.0	1.0	.95
16.....	2.25	5.4	1.8	3.4	1.55	2.3	1.4	1.1	.95	.95
17.....	2.05	4.2	1.7	2.55	1.5	1.7	1.3	1.15	.95	.9
18.....	1.85	3.0	1.7	2.2	1.5	1.6	1.3	1.75	.9	.85
19.....	1.7	3.0	1.65	2.05	2.25	1.5	1.3	1.17	.9	.85
20.....	1.6	2.8	1.9	1.9	1.9	2.35	1.2	1.15	.9	.85
21.....	1.5	2.45	2.1	1.7	1.9	2.2	1.3	1.15	.9	.8
22.....	1.5	2.35	2.0	1.6	1.6	1.55	1.7	1.45	.9	.9
23.....	1.45	2.15	2.3	1.6	1.8	2.95	1.5	1.45	.9	5.2
24.....	1.3	2.05	2.85	1.55	1.6	1.9	1.7	2.1	.85	8.6
25.....	1.25	2.0	2.35	3.0	1.5	1.5	1.3	6.2	.85	3.65
26.....	1.3	2.8	2.1	3.2	1.5	1.3	1.15	7.7	.85	2.65
27.....	1.5	2.7	1.95	2.6	1.4	1.25	1.3	3.45	.9	2.2
28.....	1.25	2.3	1.9	2.35	1.4	1.1	1.5	2.6	1.6	2.35
29.....	1.3	2.2	1.8	2.1	1.7	1.1	2.3	2.35	1.2	3.95
30.....	1.15	-----	1.7	2.55	1.6	1.1	2.9	1.9	1.0	3.60
31.....	1.1	-----	1.7	-----	1.35	-----	1.8	1.7	-----	2.70

RATING TABLE FOR YADKIN RIVER AT NORTH WILKESBORO, N. C., FROM APRIL 1 TO DECEMBER 31, 1903.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
0.05	365	0.8	680	1.6	1,018	2.4	1,490
.1	386	.9	722	1.7	1,065	2.5	1,570
.2	428	1.0	764	1.8	1,115	2.6	1,650
.3	470	1.1	806	1.9	1,165	2.7	1,730
.4	512	1.2	848	2.0	1,220	2.8	1,820
.5	554	1.3	890	2.1	1,280	2.9	1,920
.6	596	1.4	932	2.2	1,345		
.7	638	1.5	974	2.3	1,415		

Table uncertain above 1.6 feet gage height; the curve is a tangent above gage height 2.8 feet; differences 100 per tenth.

RATING TABLE FOR YADKIN RIVER AT NORTH WILKESBORO, N. C., FROM JANUARY 1, 1904, TO DECEMBER 31, 1904.

0.00	417	.60	710	1.20	1,010	1.80	1,345
.10	465	.70	760	1.30	1,060	1.90	1,410
.20	513	.80	810	1.40	1,115	2.00	1,475
.30	562	.90	860	1.50	1,170		
.40	611	1.00	910	1.60	1,225		
.50	660	1.10	960	1.70	1,285		

The above table is applicable only for open-channel conditions. It is based upon 10 discharge measurements made during 1904. It is well defined between gage heights 0 feet and 1.30 feet. The table has been extended beyond these limits. Above gage height 2 feet the discharge has been estimated.

RATING TABLE FOR YADKIN RIVER AT NORTH WILKESBORO, N. C., FOR 1905 AND 1906.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
--0.60	215	0.80	745	2.40	1,725	6.00	5,100
--.50	245	.90	790	2.60	1,880	7.00	6,100
-.40	275	1.00	840	2.80	2,045	8.00	7,100
-.30	305	1.10	890	3.00	2,220	9.00	8,100
-.20	340	1.20	945	3.20	2,400	10.00	9,100
-.10	375	1.30	1,000	3.40	2,580	11.00	10,100
.00	410	1.40	1,065	3.60	2,760	12.00	11,100
.10	450	1.50	1,115	3.80	2,950	13.00	12,100
.20	490	1.60	1,175	4.00	3,140	14.00	13,100
.30	530	1.70	1,240	4.20	3,330	15.00	14,100
.40	570	1.80	1,305	4.40	3,520	16.00	15,100
.50	610	1.90	1,370	4.60	3,710	17.00	16,100
.60	655	2.00	1,440	4.80	3,900	18.00	17,100
.70	700	2.20	1,580	5.00	4,100	19.00	18,100

The above table is applicable only for open-channel conditions. It is based on discharge measurements made during 1905-1906. Owing to changing conditions of flow, it cannot be considered as very well defined. Above gage height 4.8 feet, the rating curve is a tangent, the difference being 100 per tenth.

RATING TABLE FOR YADKIN RIVER AT NORTH WILKESBORO, N. C., FOR 1907.

0.40	470	1.60	1,075	2.80	2,040	4.00	3,140
.50	510	1.70	1,145	2.90	2,130	4.20	3,330
.60	550	1.80	1,215	3.00	2,230	4.40	3,520
.70	590	1.90	1,285	3.10	2,310	4.60	3,710
.80	635	2.00	1,360	3.20	2,400	4.80	3,900
.90	680	2.10	1,435	3.30	2,490	5.00	4,100
1.00	730	2.20	1,515	3.40	2,580	6.00	5,100
1.10	780	2.30	1,595	3.50	2,670	7.00	6,100
1.20	835	2.40	1,680	3.60	2,760	8.00	7,100
1.30	890	2.50	1,770	3.70	2,855	9.00	8,100
1.40	950	2.60	1,860	3.80	2,950		
1.50	1,010	2.70	1,950	3.90	3,045		

The above table is applicable only for open-channel conditions. It is based upon 1 discharge measurement made during 1907 and the form of the 1906 curve. It is not well defined. Above gage height 4.8 feet the rating curve is a tangent, the difference being 100 per tenth.

ESTIMATED MONTHLY DISCHARGE OF YADKIN RIVER AT NORTH WILKESBORO, N. C.

[Drainage area, 498 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maxi-mum.	Mini-mum.	Mean.	Second-feet per Square Mile.	Depth in Inches.
*1903.					
April 10-30.....	3,270	1,415	2,064	4.15	3.24
May.....	1,415	974	1,189	2.35	2.71
June.....	5,770	890	1,417	2.85	3.18
July.....	2,170	659	916	1.84	2.12
August.....	1,380	575	815	1.64	1.89
September.....	1,530	512	647	1.30	1.45
October.....	6,220	491	770	1.55	1.79
November.....	1,115	449	568	1.14	1.27
December.....	743	365	502	1.01	1.16

MONTHLY DISCHARGE OF YADKIN RIVER AT NORTH WILKESBORO, N. C.—Continued.  
 [Drainage area, 498 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maxi- mum.	Mini- mum.	Mean.	Second- feet per Square Mile.	Depth in Inches.
1904.					
January.....	860	322	532	1.07	1.23
February.....	1,730	322	742	1.49	1.61
March.....	9,300	611	1,171	2.35	2.71
April.....	935	513	602	1.21	1.35
May.....	14,500	513	1,467	2.95	3.40
June.....	4,375	611	1,224	2.46	2.74
July.....	7,650	513	1,032	2.07	2.39
August.....	3,950	611	1,069	2.13	2.46
September.....	1,770	417	594	1.19	1.33
October.....	417	345	381	.765	.882
November.....	1,060	369	461	.926	1.03
December.....	1,285	369	506	1.02	1.18
The year.....	14,500	322	814	1.64	22.31

## [Drainage area, 500 square miles.]

1905.					
January.....	3,330	215	720	1.44	1.66
February.....	2,860	340	929	1.86	1.94
March.....	1,060	570	740	1.48	1.71
April.....	2,950	530	772	1.54	1.72
May.....	3,240	510	1,010	2.02	2.33
June.....	1,720	410	585	1.17	1.30
July.....	11,600	530	1,680	3.36	3.87
August.....	3,420	530	1,200	2.40	2.77
September.....	6,000	490	819	1.64	1.83
October.....	2,950	490	608	1.22	1.41
November.....	510	450	485	.970	1.08
December.....	7,200	470	1,290	2.58	2.97
The year.....	11,600	215	903	1.81	24.59
1906.					
January.....	11,400	677	2,160	4.32	4.98
February.....	1,680	840	1,020	2.04	2.12
March.....	3,710	840	1,460	2.92	3.37
April.....	3,330	865	1,230	2.46	2.74
May.....	3,900	677	986	1.97	2.27
June.....	6,500	677	1,840	3.68	4.11
July.....	4,100	815	1,550	3.10	3.57
August.....	17,100	972	2,900	5.80	6.69
September.....	5,700	1,340	2,110	4.22	4.71
October.....	17,000	1,720	3,270	6.54	7.54
November.....	17,800	1,440	2,520	5.04	5.62
December.....	6,700	1,120	1,710	3.42	3.94
The year.....	17,800	677	1,900	3.79	51.66

NOTE.—Values are rated as follows: 1905 and 1906, fair; discharge above 4,000 second-feet, approximate.

MONTHLY DISCHARGE OF YADKIN RIVER AT NORTH WILKESBORO, N. C., FOR 1907.  
[Drainage area, 500 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maxi- mum.	Mini- mum.	Mean.	Second- feet per Square Mile.	Depth in Inches.
1907.					
January.....	3,710	1,080	1,480	2.96	3.41
February.....	1,440	890	1,040	2.08	2.17
March.....	2,310	835	1,180	2.36	2.72
April.....	3,520	862	1,320	2.64	2.94
May.....	1,250	755	945	1.89	2.18
June.....	8,000	920	1,940	3.88	4.33
July.....	1,820	705	982	1.96	2.26
August.....	1,080	590	716	1.43	1.65
September.....	8,500	510	985	1.97	2.20
October.....	680	490	546	1.09	1.26
November.....	3,140	490	778	1.56	1.74
December.....	7,700	550	1,570	3.14	3.62
The year.....	8,500	490	1,120	2.25	30.48

#### ARARAT RIVER NEAR SILOAM, N. C.

Ararat River rises in southwestern Patrick County, Va., flows southward, and empties into the Yadkin near Siloam, N. C.

The station was established as a bench-mark station April 21, 1904. It is located at the Southern Railway bridge, about 1 mile east of Siloam and a short distance above the mouth of the river.

The channel is straight for about 500 feet above and 150 feet below the station. The current is swift. Both banks slope gradually. All water passes beneath the bridge and approaches. The bed of the stream is composed of sand, is free from vegetation, and is somewhat shifting. There is but one channel at all stages. Flood stages will flow around the cribwork pier on each bank, supporting the ends of the iron bridge. High water in Yadkin River will make this site valueless as a gaging station, but it is a good point for low-water measurements. The bridge crosses the stream almost at right angles.

Discharge measurements are made from the downstream side of the single-span bridge, which has a short trestle approach at each end.

The bench mark is the surface of the outer eyebar of the lower chord of the bridge, downstream side, exactly midway between the ends of the bridge, just outside the iron tension rods. Its elevation is 28.00 feet above gage datum. No gage-height records are made.

## DISCHARGE MEASUREMENTS OF ARARAT RIVER NEAR SILOAM, N. C., IN 1904-1905.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1904.						
Apr. 21	B. S. Drane.....	111	169	1.64	1.08	277
June 9	do.....	114	217	1.41	1.63	306
Sept. 24	do.....	111	210	.81	.80	170
1905.						
Jan. 5	B. S. Drane.....	110	224	0.93	0.85	209
Aug. 24	do.....	129	299	2.25	2.38	604

## FISHER RIVER NEAR CRUTCHFIELD, N. C.

This station was established as a bench-mark station April 20, 1904. It is located about 2 miles east of Crutchfield, N. C., at the Southern Railway bridge, just above the mouth of the river. Discharge measurements are made from the upstream side of the one-span bridge.

Bench mark No. 1 is the upstream edge of the upper surface of the I beam forming the upstream lower chord, at a point 90 feet from the end of the guard rail at right bank. Its elevation is 27 feet above datum. No gage-height records are made.

## DISCHARGE MEASUREMENTS OF FISHER RIVER NEAR CRUTCHFIELD, N. C., IN 1904.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
Apr. 20	B. S. Drane.....	87	265	0.59	1.40	156
Sept. 24	do.....	103	320	.25	1.06	80

## MITCHELL RIVER AT BURCH, N. C.

Mitchell River rises in the northeastern part of Alleghany County, N. C., and flows southeastward into the Yadkin.

The station was established as a bench-mark station April 20, 1904. It is located at the Southern Railway bridge at Burch, a few hundred feet above the mouth of Mitchell River.

Discharge measurements are made from the downstream side of the one-span railway bridge.

The bench mark is the upper edge of the outermost eyebar of the lower chord, downstream side, midway between the ends of the bridge. Its elevation is 27 feet above gage datum. No gage-height records are made.

## DISCHARGE MEASUREMENTS OF MITCHELL RIVER AT BURCH, N. C.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1904.						
Apr. 20	B. S. Drane.....	84.5	169	.57	2.07	96
Sept. 23	do.....	65	150	.46	1.99	69
1905.						
Apr. 27	B. S. Drane.....	85	206	0.60	2.33	125

## ROARING RIVER AT ROARING RIVER, N. C.

Roaring River rises in the extreme northern part of Wilkes County, N. C., and flows south, east, and south into the Yadkin.

The station was established as a bench-mark station April 20, 1904. It is located at the Southern Railway bridge a short distance above the mouth of Roaring River, at the town of Roaring River.

Discharge measurements are made from the downstream side of the one-span bridge.

The bench mark is the edge of the outermost eyebar of the downstream lower chord, at a point midway between the ends of the bridge opposite the iron tension rods. Its elevation is 27.00 feet above gage datum. No gage-height records are made.

DISCHARGE MEASUREMENTS OF ROARING RIVER AT ROARING RIVER, N. C.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1904.						
Apr. 20	B. S. Drane	62	103	1.20	1.55	125
June 9	do.	78	106	1.70	1.93	178
Sept. 23	do.	63	53	1.36	1.10	72
1905.						
Jan. 4	B. S. Drane	70	78	1.02	1.22	73
Apr. 26	do.	71	102	1.10	1.63	113
Aug. 23	do.	80	129	1.64	2.35	211

## MULBERRY RIVER NEAR NORTH WILKESBORO, N. C.

Mulberry River rises on the eastern slope of the Blue Ridge Mountains in northwestern Wilkes County, N. C., and flows southeastward into the Yadkin.

The station was established as a bench-mark station November 7, 1903. It is located at the Southern Railway bridge, about 2 miles east of North Wilkesboro and less than one-half mile above the mouth of Mulberry River.

Discharge measurements are made from the downstream side of the bridge.

The bench mark is the apex of the triangular downstream end of the iron bearing through which pass the iron tension rods midway between the ends of the truss, on the downstream side of the bridge, about 2 feet east of the second bent from the left bank. Its elevation is 24.00 feet above gage datum. No gage-height records are made.



## DISCHARGE MEASUREMENTS OF MULBERRY RIVER NEAR NORTH WILKESBORO, N. C.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1904.						
Apr. 19	B. S. Drane .....	15	25	1.62	1.12	41
June 8	do .....	25	31	1.96	1.30	61
Sept. 22	do .....	21	21	1.37	.91	29
1905.						
Jan. 4	B. S. Drane .....	22	24	1.17	0.89	28
Apr. 26	do .....	19	31	1.97	1.22	61

## REDDIE RIVER AT NORTH WILKESBORO, N. C.

Reddie River rises on the east slope of the Blue Ridge, in western Wilkes County, N. C., flows southeastward, and unites with the Yadkin at Wilkesboro.

The station was established as a bench-mark station April 18, 1904. It is located at the highway bridge just outside the town of North Wilkesboro, about one-half mile above the mouth of Reddie River.

Discharge measurements are made from the downstream side of the single-span covered bridge, the meter being lowered outside the floor.

The bench mark is the upper edge of the lower rail of the downstream guard rail, by the side of a notch, 66 feet from the left bank end. Its elevation is 27.00 feet above gage datum. No gage-height records are made.

## DISCHARGE MEASUREMENTS OF REDDIE RIVER AT NORTH WILKESBORO, N. C.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1904.						
Apr. 18	B. S. Drane .....	57	61	1.22	1.96	75
June 9	do .....	59	91	1.69	2.26	153
Sept. 23	do .....	50	51	1.57	1.66	80
1905.						
Jan. 4	B. S. Drane .....	64	57	1.44	2.40	82
Aug. 23	do .....	66	132	1.97	2.73	261

## CATAWBA RIVER DRAINAGE BASIN.

## DESCRIPTION OF BASIN.

The Catawba River drainage basin of North Carolina is a portion of the large Santee River basin of South and North Carolina. The Santee River is formed in the central part of South Carolina by the junction of Congaree and Wateree rivers, flows southeastward, and enters the Atlantic Ocean about 10 miles north of Cape Roumain. It has a total length of about 180 miles (following the course of the river) and drains an area of about 15,000 square miles. It is a navigable stream for its entire length.

Wateree River, the more northerly of the two parent streams, rises on the eastern slope of the Blue Ridge, in McDowell County, N. C., and flows northeastward and then eastward, then bends abruptly to the southeast and flows in this general direction across the south central part of North Carolina and the north central part of South Carolina to its junction with the Congaree, practically paralleling the course of Yadkin and Pee Dee rivers. This stream, throughout its course in North Carolina and also through that part of its course in South Carolina above the mouth of Wateree Creek, is known as Catawba River. The total length of the stream is about 270 miles in a straight line, and about 450 miles when all the windings are followed.

The drainage basin resembles that of the Yadkin in many respects, the upper portion of the stream flowing between parallel ranges of mountains, from which it receives many tributaries, affording much power. The average width of the valley of the main stream in North Carolina is only from 15 to 20 miles, and the fall in the main stream is considerable. The greater part of the drainage basin is hilly, and the upper portions are mountainous. A number of the tributary streams rise and flow for almost their entire course in high mountains. About 65 per cent of the upper part of the basin is in forest. Linville and John rivers, the principal tributaries in North Carolina, flow in country of this character, and their basins are almost entirely forested.

Broad River rises on the eastern slope of the Blue Ridge near Hickory Nut Gap, in the southwestern part of McDowell County and the northeastern part of Henderson County, N. C., and flows in a general southeasterly direction across a portion of south-central North Carolina and north-central South Carolina to its junction with the Saluda at Columbia. The length of the river in a straight line is about 128 miles, but it is much greater if the course of the river is followed.

## MEASUREMENTS OF STREAM FLOW.

## CATAWBA RIVER NEAR ROCK HILL, S. C.

This station was established on September 3, 1895, and was discontinued May 31, 1903. It was located at the bridge of the Southern Railway, 3 miles south of Fort Mill, S. C., and about 60 miles below the Catawba Station, now abandoned. A wire gage of the ordinary type is fastened to the upstream guard rail on the upper side, the 2-foot mark on the rod being over the center of the second vertical compression member of the second truss from the south end of the bridge.

The channel of the stream is curved above and below the bridge, which crosses at the head of a bend. The current flows at an angle with the bridge and is swift; the water is shallow at ordinary stages of the stream, and the bottom rough. Altogether, the station was a poor one. The observer was D. A. Morris, a farmer living near the bridge.

## DISCHARGE MEASUREMENTS MADE OF CATAWBA RIVER AT ROCK HILL, S. C.

Date.	Hydrographer.	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second-feet).
1895.					
Sept. 23	C. C. Babb.....	806	1.66	1.58	1,340
Oct. 25	do.....	852	1.73	1.51	1,477
1896.					
Apr. 16	E. W. Myers.....	1,159	1.54	1.90	1,787
Aug. 20	do.....	924	1.63	1.78	1,508
Sept. 17	do.....	979	1.36	1.53	1,336
1897.					
Feb. 9	E. W. Myers.....	3,178	3.05	4.50	9,711
Apr. 6	do.....	10,121	4.54	12.10	46,040
Aug. 15	do.....	1,091	1.83	1.55	2,006
Oct. 8	do.....	896	1.71	1.21	1,532
Nov. 1	A. P. Davis.....	1,254	2.00	1.45	2,619
1898.					
Jan. 26	E. W. Myers.....	2,297	3.36	3.20	7,732
Oct. 26	do.....	2,033	3.49	3.50	7,108
1899.					
Feb. 23	.....	.....	.....	3.10	8,086
June 13	.....	.....	.....	2.45	6,065
Oct. 3	.....	.....	.....	1.60	2,104
Dec. 18	.....	.....	.....	2.00	2,848
1900.					
Feb. 21	.....	.....	.....	2.63	3,803
Feb. 22	.....	.....	.....	5.28	16,791
Apr. 13	.....	.....	.....	2.75	4,703
Apr. 21	.....	.....	.....	9.07	31,610
May 21	.....	.....	.....	2.42	3,703
July 4	.....	.....	.....	2.86	5,623
Aug. 16	.....	.....	.....	1.70	1,936
Oct. 26	.....	.....	.....	3.30	8,843
1901.					
Apr. 4	.....	.....	.....	9.80	33,150
Apr. 23	.....	.....	.....	4.65	10,314
May 23	.....	.....	.....	24.15	150,783
July 20	.....	.....	.....	2.00	3,822
Nov. 17	.....	.....	.....	2.10	4,290
1902.					
May 13	J. S. Henderson.....	1,623	2.47	2.20	4,013
Aug. 8	B. S. Drane.....	1,255	2.46	1.70	3,086
Aug. 29	do.....	1,153	2.17	1.62	2,504
1903.					
Mar. 24	E. W. Myers.....	16,329	5.94	17.75	96,981

DAILY GAGE HEIGHT OF CATAWBA RIVER AT ROCK HILL, S. C., FOR 1895.

Day.	Sept.	Oct.	Nov.	Dec.
1		1.50	1.50	1.70
2		1.50	1.60	1.70
3		1.50	1.70	1.70
4		1.50	1.70	1.70
5		1.50	1.60	1.70
6		1.50	1.60	1.60
7		1.50	1.60	1.60
8		1.50	2.05	1.60
9		1.50	2.10	1.60
10		1.50		1.80
11		1.50		1.80
12		1.60		1.70
13		1.50		1.70
14		1.50		1.70
15		1.50		1.70
16		1.50		1.60
17		1.50	1.70	1.60
18		1.50	1.60	1.60
19		1.50	1.60	1.60
20		1.50	1.60	1.60
21		1.50	1.60	1.80
22		1.50	1.60	3.40
23	1.60	1.50	1.60	3.60
24	1.60	1.50	1.60	2.60
25	1.60	1.50	1.60	2.20
26	1.50	1.50	1.60	2.10
27	1.50	1.50	1.70	2.00
28	1.50	1.50	2.00	2.00
29	1.50	1.50	1.90	2.30
30	1.50	1.50	1.70	2.20
31		1.50		3.50

DAILY GAGE HEIGHT, IN FEET, OF CATAWBA RIVER AT ROCK HILL, S. C., FOR 1896-1897.

1896.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	3.30	2.10	2.30	2.10	1.70	1.50	1.70	2.00	1.50	3.90	1.60	5.50
2.....	2.90	2.10	2.20	2.70	1.80	1.90	1.60	1.90	1.50	2.60	1.70	4.30
3.....	2.40	3.60	2.10	5.80	3.80	2.20	2.00	2.00	1.50	2.00	1.70	3.10
4.....	2.20	4.90	2.10	3.50	4.30	2.50	2.60	1.90	1.50	1.70	1.70	2.60
5.....	2.00	3.50	2.00	2.80	2.90	3.20	2.00	1.90	2.10	1.60	3.30	2.40
6.....	1.90	6.25	2.00	2.50	2.50	2.60	4.50	2.00	2.10	1.60	5.40	2.30
7.....	1.80	6.60	2.00	2.30	2.30	2.10	5.20	1.90	2.90	1.60	3.90	2.40
8.....	1.80	4.90	2.00	2.20	2.10	1.90	7.37	1.80	2.20	1.50	2.60	2.30
9.....	2.00	5.70	1.90	2.10	2.00	1.80	12.22	1.80	1.90	1.50	2.40	2.20
10.....	1.90	5.30	1.90	2.10	2.00	2.20	15.20	1.70	1.70	1.50	2.20	2.10
11.....	1.90	4.00	1.90	2.00	1.90	1.80	10.65	1.70	1.60	1.60	2.00	2.00
12.....	1.90	3.20	2.10	2.00	1.80	1.70	7.90	1.70	1.60	1.50	1.90	1.90
13.....	1.80	2.80	2.10	2.00	1.80	1.70	6.30	1.80	1.50	1.50	2.50	1.90
14.....	1.80	2.90	2.00	1.90	1.80	1.60	4.40	1.70	2.00	1.50	2.20	1.90
15.....	1.80	2.80	2.00	1.90	1.70	1.60	3.40	2.10	1.70	1.60	2.20	1.90
16.....	1.80	2.70	1.90	1.90	1.70	1.60	3.10	2.00	1.60	1.60	2.10	3.20
17.....	2.10	2.60	1.90	1.90	1.70	1.60	2.80	1.90	1.60	1.60	1.90	3.40
18.....	2.40	2.40	1.90	1.90	1.70	1.60	2.60	2.00	1.60	1.50	1.80	2.70
19.....	2.20	2.40	1.90	1.80	1.70	1.80	2.40	2.00	1.60	1.50	1.80	2.30
20.....	2.00	2.30	2.10	1.80	1.70	2.00	2.70	1.80	1.60	1.50	1.80	2.20
21.....	2.00	2.30	2.00	1.80	1.60	2.00	2.50	1.70	1.50	1.50	1.80	2.10
22.....	1.90	2.20	2.10	1.80	1.60	1.90	2.50	1.60	1.60	1.50	1.70	2.00
23.....	2.60	2.10	2.00	1.80	1.60	2.10	2.20	1.60	1.60	1.50	1.70	2.00
24.....	3.80	2.10	2.00	1.80	1.60	1.90	2.30	1.60	1.60	1.60	1.70	1.90
25.....	4.50	2.20	2.00	1.80	2.60	1.90	2.20	1.60	1.60	1.60	1.70	1.80
26.....	3.80	2.10	2.20	1.80	1.90	2.10	2.10	1.60	1.60	1.60	1.70	1.80
27.....	2.90	2.10	2.10	1.80	1.80	2.00	2.10	1.60	1.50	1.60	1.70	1.80
28.....	2.60	2.10	2.00	1.80	1.90	2.00	2.40	1.60	1.50	1.60	1.70	1.80
29.....	2.40	2.30	2.00	1.70	1.80	2.00	2.40	1.60	1.60	1.50	1.90	1.80
30.....	2.20		1.90	1.70	1.70	1.90	2.30	1.50	4.30	1.50	2.20	1.80
31.....	2.20		2.00		1.60		2.10	1.50		1.60		1.80
1897.												
1.....	1.80	1.85	2.60	2.50	2.70	2.00	1.70	1.45	1.40	1.20	1.40	1.85
2.....	1.75	2.70	2.50	2.40	2.90	1.90	1.60	1.45	1.40	1.20	1.50	1.60
3.....	1.70	3.30	2.40	2.40	4.40	1.90	1.50	1.50	1.40	1.20	1.55	1.70
4.....	1.70	3.30	2.30	2.60	3.20	1.80	1.50	1.60	1.40	1.20	1.95	1.80
5.....	1.70	2.70	2.30	10.30	2.70	2.60	1.60	1.60	1.40	1.20	1.70	1.85
6.....	1.70	8.50	2.30	13.30	2.50	2.40	1.80	1.90	1.30	1.20	1.60	1.90
7.....	1.90	14.75	7.70	7.00	2.40	2.20	1.60	2.20	1.30	1.20	1.50	1.80
8.....	1.80	10.20	7.60	4.00	2.30	4.30	2.30	2.45	1.30	1.20	1.50	1.70
9.....	1.80	5.00	4.50	3.50	2.30	3.60	2.30	2.10	1.30	1.20	1.50	1.70
10.....	1.70	3.60	4.80	3.30	2.20	3.00	2.20	1.90	1.30	1.20	1.50	1.60
11.....	1.70	3.20	5.70	3.50	2.20	2.70	2.00	4.70	1.25	1.30	1.50	1.60
12.....	1.70	3.50	5.30	3.00	2.20	2.30	1.80	2.50	1.20	1.65	1.45	1.60
13.....	1.70	3.70	5.60	2.90	2.40	2.30	2.40	1.80	1.20	4.80	1.40	1.60
14.....	1.70	3.50	6.40	2.80	4.20	2.00	2.30	1.65	1.20	2.90	1.40	1.55
15.....	1.70	3.20	7.10	2.70	2.90	2.00	2.10	1.60	1.20	2.00	1.40	1.60
16.....	1.80	3.00	5.10	2.80	2.45	2.00	1.70	1.90	1.20	1.65	1.40	1.70
17.....	1.80	2.90	5.00	2.80	2.25	1.90	1.55	1.70	1.20	1.50	1.40	1.90
18.....	1.90	2.70	4.50	2.60	2.20	2.00	1.70	1.60	1.20	1.45	1.40	1.75
19.....	1.90	2.50	3.70	2.50	2.20	2.00	1.60	1.70	1.20	1.40	1.40	1.70
20.....	2.00	2.50	4.20	2.45	2.10	1.90	2.00	1.60	1.20	1.45	1.40	1.65
21.....	3.60	3.30	4.10	2.40	2.20	2.20	2.35	1.50	1.50	1.50	1.40	1.70
22.....	3.70	3.00	3.60	2.35	2.00	1.90	5.25	1.60	1.30	2.30	1.40	1.90
23.....	3.10	3.00	3.20	2.30	2.00	1.70	2.60	1.60	1.25	1.80	1.40	2.00
24.....	2.50	7.80	3.00	2.30	2.00	1.65	2.00	1.80	1.25	1.60	1.40	2.00
25.....	2.30	4.80	2.90	2.30	2.10	1.60	1.70	2.00	1.50	1.50	1.40	1.90
26.....	2.10	3.50	2.70	2.20	2.10	1.90	1.60	1.70	1.60	1.50	1.40	1.85
27.....	2.00	3.10	2.60	2.30	2.00	1.70	2.30	1.60	1.40	1.50	2.40	2.10
28.....	2.00	2.70	2.50	2.40	1.90	1.70	2.00	1.50	1.35	1.45	2.70	2.20
29.....	1.90		2.50	2.20	1.90	1.70	1.80	1.50	1.30	1.45	2.15	2.10
30.....	1.70		2.40	2.20	2.00	1.70	1.60	1.45	1.30	1.45	2.10	1.90
31.....	1.70		2.55		1.90		1.50	1.45		1.40		1.80

## DAILY GAGE HEIGHT, IN FEET, OF CATAWBA RIVER AT ROCKHILL, S. C., FOR 1898-1899.

1898.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1	1.80	2.00	1.50	4.40	1.60	1.40	1.25	1.90	1.90	2.50	2.70	2.70
2	1.70	1.90	1.50	3.10	1.60	1.35	1.20	1.80	(*)	2.30	2.60	2.60
3	1.65	1.80	1.50	2.50	1.50	1.25	1.10	1.80	(*)	2.40	2.50	2.50
4	1.60	1.70	1.75	2.20	1.50	1.20	1.00	2.30	(*)	3.35	2.50	2.60
5	1.60	1.70	2.00	2.50	1.50	1.20	1.00	1.80	(*)	10.00	2.50	3.80
6	1.60	1.70	1.80	3.80	1.50	1.10	1.00	5.60	(*)	10.30	2.50	4.90
7	1.60	1.70	1.60	2.90	1.45	1.10	2.40	3.00	(*)	9.80	3.00	3.65
8	1.60	1.70	1.60	2.40	1.70	1.10	2.00	2.50	(*)	4.80	2.60	3.10
9	1.60	1.70	1.55	2.15	1.60	1.10	1.65	2.40	(*)	3.80	2.55	2.90
10	1.60	1.70	1.55	2.00	1.50	1.10	1.90	2.20	(*)	3.30	2.50	2.80
11	1.60	1.70	1.50	2.00	1.50	1.10	1.90	2.50	(*)	3.20	2.50	2.60
12	1.65	1.70	1.50	1.90	1.50	1.10	1.55	3.00	(*)	2.90	2.60	2.60
13	1.65	1.70	1.50	1.85	1.90	1.00	1.45	1.90	(*)	2.80	2.50	2.60
14	1.70	1.70	1.60	1.85	1.65	1.00	1.50	3.00	(*)	2.80	2.60	2.50
15	1.70	1.65	1.70	1.90	1.50	1.10	1.60	3.00	(*)	2.60	2.70	2.50
16	1.70	1.65	1.70	1.80	1.50	1.10	4.10	2.40	(*)	2.50	2.60	2.40
17	1.65	1.80	1.70	1.70	1.40	3.30	2.90	2.40	(*)	2.40	2.60	2.40
18	1.60	1.60	1.70	1.70	1.40	1.60	2.90	2.30	(*)	2.40	2.70	2.40
19	1.60	1.60	2.90	1.60	1.40	2.30	2.00	2.40	(*)	2.55	3.00	2.30
20	1.60	1.65	2.15	1.60	1.40	2.60	1.80	6.30	(*)	5.00	3.10	2.30
21	1.60	1.70	1.90	1.60	1.30	2.10	1.60	7.51	(*)	3.45	3.05	2.80
22	2.25	1.65	1.75	1.55	1.30	2.60	1.55	5.00	(*)	5.65	2.90	2.80
23	2.30	1.65	1.65	1.50	1.20	1.40	1.50	2.50	(*)	8.40	2.80	3.80
24	2.05	1.60	1.60	1.80	1.30	1.30	2.35	2.25	(*)	4.80	2.90	4.40
25	2.10	1.60	1.70	2.10	2.30	1.20	2.80	2.00	(*)	3.70	3.00	3.70
26	3.15	1.50	1.80	2.10	2.20	1.20	2.50	2.15	3.80	3.35	2.80	3.20
27	4.05	1.50	1.70	1.90	1.90	1.45	2.40	2.30	3.20	3.30	2.70	2.90
28	3.00	1.50	1.60	1.80	1.60	1.20	2.55	2.00	2.90	3.10	2.60	2.80
29	2.50		1.60	1.70	1.55	1.40	2.10	2.00	2.80	2.90	2.50	2.70
30	2.25		3.10	1.60	1.50	1.30	2.90	4.00	2.60	2.70	2.70	2.60
31	2.10		6.60		1.40		2.80	3.60		2.90		2.60
1899.												
1	2.20	2.40	6.20	4.00	2.80	2.20	2.10	2.10	2.00	1.70	1.90	1.70
2	2.80	2.50	4.10	3.70	2.80	2.20	2.00	2.00	3.50	1.60	1.80	1.70
3	2.60	2.30	3.40	3.40	2.70	2.40	2.00	1.90	2.50	1.60	1.70	1.60
4	2.30	2.30	3.40	3.25	2.70	2.40	1.85	1.90	2.10	1.60	2.10	1.60
5	2.30	7.90	4.80	4.30	2.60	2.25	1.80	1.90	2.10	1.50	1.80	1.60
6	2.20	10.75	4.10	4.20	2.60	2.20	1.80	1.80	2.00	1.50	1.70	1.60
7	8.30	11.70	4.30	3.80	2.60	2.20	1.80	1.70	2.00	1.80	1.60	1.60
8	8.00	10.20	3.70	6.20	3.30	2.15	1.90	1.70	2.60	2.40	1.60	1.60
9	5.10	6.20	3.20	6.90	3.80	2.10	2.00	1.80	1.90	2.10	1.60	1.60
10	3.30	4.20	3.10	4.80	3.10	2.10	2.00	2.00	2.30	1.80	1.60	1.70
11	2.80	3.50	2.90	4.00	2.90	2.50	1.90	2.20	2.60	1.80	1.60	1.60
12	2.85	3.10	2.90	3.70	2.80	2.50	1.90	2.40	2.10	1.70	1.60	2.80
13	2.70	2.80	2.80	3.50	2.70	2.40	1.80	2.20	1.80	1.70	1.60	3.30
14	3.10	2.50	2.60	3.40	4.30	2.90	1.80	1.90	1.80	1.70	1.60	3.60
15	3.60	2.60	7.55	3.30	3.40	2.60	1.80	1.80	1.80	1.70	1.60	2.60
16	3.30	3.10	14.05	3.15	2.90	2.35	1.80	1.80	1.70	1.70	1.60	2.20
17	2.95	5.80	12.00	3.20	2.70	2.20	1.80	1.80	1.70	1.70	1.60	2.10
18	2.80	6.60	5.70	3.10	2.60	2.05	1.80	1.80	1.55	1.70	1.50	2.00
19	2.70	4.80	5.30	3.10	2.55	2.05	1.80	1.80	1.50	1.70	1.50	2.20
20	2.60	3.90	16.85	3.00	2.55	2.05	1.80	1.70	1.80	1.70	1.50	2.10
21	2.50	3.40	14.20	2.90	2.50	2.00	2.10	1.70	2.00	1.70	1.50	2.10
22	2.40	3.30	5.70	2.85	2.40	2.00	1.80	1.60	1.90	1.70	1.50	2.10
23	2.40	3.10	4.40	2.80	2.40	2.00	1.80	1.60	1.70	1.70	1.70	2.00
24	2.20	3.10	4.40	2.80	2.50	2.00	1.70	1.60	1.70	1.60	1.70	2.70
25	2.40	2.90	4.00	2.80	2.50	2.00	1.80	1.60	1.60	1.60	1.70	2.70
26	2.40	2.80	3.70	3.50	2.40	2.00	1.90	1.60	1.60	1.60	1.90	2.70
27	2.40	5.99	4.55	3.85	2.35	2.00	2.50	1.50	1.60	1.60	1.80	2.40
28	2.30	10.40	5.50	3.30	2.35	2.15	2.70	1.60	1.60	1.60	1.70	2.10
29	2.30		6.20	3.00	2.35	2.20	2.05	2.20	1.70	1.60	1.70	2.10
30	2.30		5.30	2.90	2.30	2.10	2.00	2.10	1.70	1.60	1.70	2.10
31	2.20		4.40		2.30		2.20	1.90		1.80		2.00

\*Gage broken.

DAILY GAGE HEIGHT, IN FEET, OF CATAWBA RIVER AT ROCKHILL, S. C., FOR 1900-1901.

1900.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	1.80	2.10	4.60	2.80	(*)	2.30	3.00	2.20	1.80	1.40	1.90	2.20
2.....	1.80	2.00	11.90	2.70	(*)	2.30	2.90	2.10	1.80	1.40	1.80	2.00
3.....	2.70	2.00	7.90	2.60	(*)	2.20	2.80	2.00	1.80	1.40	1.80	2.00
4.....	2.70	2.10	4.50	2.50	(*)	2.50	2.80	1.90	1.80	1.40	3.40	3.20
5.....	2.30	2.20	3.70	2.80	(*)	2.50	2.50	1.90	1.70	1.40	3.00	4.20
6.....	2.20	2.40	3.30	2.80	(*)	2.40	2.40	1.80	1.70	1.40	2.50	4.10
7.....	2.00	2.40	3.10	2.60	(*)	2.30	2.40	1.80	1.70	1.70	2.10	2.90
8.....	2.00	2.00	3.00	2.60	(*)	2.30	2.30	1.80	1.70	1.70	2.00	2.40
9.....	2.00	2.00	3.80	2.60	(*)	2.40	2.20	1.80	1.60	1.80	2.00	2.20
10.....	2.00	2.60	4.10	2.50	(*)	2.40	2.20	1.80	1.60	1.60	1.90	2.20
11.....	1.90	3.80	3.70	2.50	(*)	2.40	2.20	1.70	1.50	1.60	1.80	2.20
12.....	3.20	3.80	3.40	2.20	2.40	2.30	2.10	1.70	1.50	1.60	1.70	2.20
13.....	4.70	6.30	3.20	2.70	2.30	2.20	2.10	1.70	1.50	1.60	1.70	2.00
14.....	3.50	12.30	3.10	2.60	2.30	2.20	2.10	1.70	1.50	1.50	1.70	1.90
15.....	2.80	7.50	2.90	2.50	2.30	2.60	2.10	1.70	1.60	1.50	1.70	1.90
16.....	2.50	4.30	5.80	2.50	2.30	2.55	2.10	1.70	1.60	1.50	1.70	1.90
17.....	2.40	3.40	6.70	2.50	2.25	3.90	2.10	2.00	3.20	1.50	1.70	1.90
18.....	2.20	3.00	4.50	2.40	2.30	6.75	2.10	2.00	2.70	1.60	1.70	1.80
19.....	2.00	2.90	3.60	10.00	4.60	6.30	2.10	1.90	2.10	1.40	1.70	1.80
20.....	2.90	2.60	3.30	(*)	2.60	4.40	2.00	1.90	1.80	1.40	1.70	1.80
21.....	3.30	2.60	3.80	(*)	2.40	3.30	1.90	1.70	1.80	1.40	1.70	4.20
22.....	3.20	4.90	3.70	(*)	2.20	2.90	1.90	1.60	1.70	1.35	1.70	3.80
23.....	2.70	5.40	3.30	(*)	2.20	5.80	2.10	2.30	1.70	1.40	1.70	4.20
24.....	2.50	4.00	2.30	(*)	2.20	6.50	2.60	2.10	1.40	7.75	1.70	2.90
25.....	2.40	3.40	2.90	(*)	3.40	5.00	2.60	1.80	1.40	11.30	1.70	2.80
26.....	2.40	3.30	3.10	(*)	3.60	4.90	2.20	2.00	1.30	3.40	1.80	2.70
27.....	2.30	3.00	3.70	(*)	2.80	4.00	2.30	1.90	1.30	2.50	6.10	2.50
28.....	2.20	2.80	3.50	(*)	2.60	3.50	2.50	1.80	1.30	2.20	3.90	2.30
29.....	2.10		3.20	(*)	2.50	3.20	2.30	1.80	1.30	2.10	2.60	2.20
30.....	2.10		3.10	(*)	2.40	3.10	2.90	2.00	1.30	2.00	2.30	2.20
31.....	2.10		3.00		2.30		2.20	1.80		2.00		2.60
1901.												
1.....	2.70	2.00	1.90	3.10	2.90	3.50	4.90	2.30	5.55	4.10	2.20	2.00
2.....	2.80	2.00	1.90	6.55	2.90	3.30	4.00	2.20	5.20	3.90	2.20	2.00
3.....	2.70	2.00	1.90	11.80	2.80	3.10	3.50	2.20	4.10	3.80	2.20	2.00
4.....	2.40	3.80	1.90	12.90	2.70	3.00	3.30	2.10	3.70	3.50	2.20	2.30
5.....	2.40	2.80	1.90	6.90	2.70	3.00	2.70	2.00	3.50	2.80	2.20	2.50
6.....	2.20	2.70	1.90	4.10	2.60	3.00	2.50	8.80	3.20	2.60	2.20	2.30
7.....	2.10	2.40	1.90	3.90	2.60	3.90	2.30	12.35	3.10	2.60	2.25	2.15
8.....	2.10	2.20	1.80	3.10	2.50	3.50	3.50	12.90	3.00	2.60	2.20	2.00
9.....	2.10	2.20	1.80	3.00	2.70	3.00	7.20	4.00	3.00	2.50	2.20	2.10
10.....	2.00	2.40	1.80	2.70	2.90	2.50	5.00	3.00	2.90	2.40	2.15	2.10
11.....	2.20	2.30	2.00	2.60	2.70	2.50	3.50	2.70	2.90	2.40	2.15	2.20
12.....	3.00	2.30	2.30	2.50	2.70	2.50	2.80	2.60	2.80	2.40	2.15	2.50
13.....	8.50	2.30	2.80	2.50	2.60	2.50	2.40	2.80	2.80	2.40	2.20	2.30
14.....	4.10	2.30	2.40	3.50	2.50	2.50	2.30	7.40	2.80	2.50	2.20	2.40
15.....	3.40	2.20	2.20	4.00	2.50	6.70	3.30	14.30	2.80	3.10	2.20	5.20
16.....	2.70	2.20	2.10	3.50	2.40	9.20	3.50	14.50	2.80	3.00	2.20	14.40
17.....	2.50	2.20	2.00	2.90	2.40	7.00	3.40	12.00	4.30	2.90	2.10	5.00
18.....	2.50	2.20	2.00	2.70	2.40	6.00	2.80	9.50	4.50	2.40	2.10	3.50
19.....	2.40	2.20	2.00	2.60	2.20	4.70	3.50	7.20	5.90	2.30	2.10	3.00
20.....	2.30	2.10	2.00	10.50	2.80	4.50	3.20	6.00	4.30	2.30	2.10	2.80
21.....	2.20	2.10	2.00	19.65	3.00	4.50	2.70	4.60	3.00	2.30	2.10	2.60
22.....	2.20	2.00	1.90	12.20	15.30	5.00	2.30	5.30	2.90	2.20	2.10	2.60
23.....	2.20	2.00	1.90	5.00	21.80	4.70	2.20	7.00	2.70	2.20	2.10	2.60
24.....	2.10	1.90	1.90	4.20	15.40	6.50	2.20	9.90	2.60	2.20	2.40	2.60
25.....	2.10	1.90	1.90	3.80	5.30	4.30	2.10	7.10	2.60	2.20	2.45	2.70
26.....	2.10	1.90	4.10	3.50	4.60	3.80	2.00	5.50	2.60	2.20	2.30	2.70
27.....	2.00	1.90	13.60	3.30	7.90	3.30	2.00	8.50	2.60	2.20	2.30	3.70
28.....	2.00	1.90	10.50	3.10	8.50	3.60	2.30	5.80	2.60	2.20	2.10	3.20
29.....	2.00		4.50	3.00	5.80	3.10	2.10	5.70	3.70	2.20	2.10	9.10
30.....	2.00		4.00	2.90	4.50	3.50	2.00	9.50	5.40	2.20	2.10	18.65
31.....	2.00		3.60		3.80		2.00	5.60		2.20		17.90

\*Gage broken; no record.

DAILY GAGE HEIGHT, IN FEET, OF CATAWBA RIVER NEAR ROCKHILL, S. C., FOR 1902.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	7.50	4.00	15.30	4.10	2.30	2.00	2.20	2.10	1.60	1.90	1.80	4.25
2.....	4.70	9.00	11.90	3.90	2.30	2.00	2.10	2.10	1.60	2.30	1.75	2.90
3.....	3.70	6.20	6.30	3.50	2.30	2.00	2.00	2.10	1.60	2.00	1.70	5.60
4.....	3.40	4.50	5.60	3.10	2.30	2.00	2.00	1.90	2.70	1.80	1.70	5.10
5.....	3.20	3.40	4.00	3.00	2.30	1.90	1.90	1.90	2.80	1.90	1.70	4.00
6.....	2.90	3.20	4.00	3.00	2.30	1.90	2.00	1.80	2.40	3.20	1.70	3.60
7.....	2.90	3.00	4.00	2.90	2.20	2.10	1.90	1.80	1.70	3.10	2.00	3.40
8.....	2.80	3.00	3.40	3.00	2.20	1.90	1.90	1.70	1.60	2.20	2.45	2.75
9.....	2.80	2.80	3.50	3.20	2.20	2.20	1.90	1.70	3.20	1.90	2.00	2.50
10.....	2.80	2.70	3.40	3.10	2.20	2.10	2.40	1.70	5.50	1.80	1.80	2.30
11.....	2.70	2.60	3.20	2.90	2.20	2.00	2.60	1.70	3.50	1.90	1.80	2.15
12.....	2.70	2.60	3.00	2.70	2.20	1.90	2.50	2.00	2.40	2.40	1.80	2.15
13.....	2.70	2.60	3.30	2.60	2.20	1.90	2.50	2.10	1.90	2.20	1.75	2.40
14.....	2.60	2.60	3.10	2.60	2.20	1.90	2.40	6.00	1.80	2.70	1.70	2.40
15.....	2.60	2.70	3.00	2.50	2.30	2.00	2.30	3.50	1.60	2.30	1.70	2.30
16.....	2.60	2.70	3.00	2.50	2.40	6.60	2.20	2.40	1.60	2.00	1.70	2.15
17.....	2.50	2.70	3.40	2.40	2.30	16.40	2.10	1.85	1.60	1.80	1.70	2.65
18.....	2.50	2.70	5.30	2.70	2.40	7.40	2.00	1.80	1.60	1.80	6.10	3.20
19.....	2.50	2.70	3.90	2.60	2.40	4.10	1.90	1.70	1.60	1.60	2.50	2.90
20.....	2.50	2.70	3.40	2.60	2.60	2.60	1.90	1.70	1.60	1.60	2.60	2.50
21.....	2.50	2.70	3.10	2.60	2.50	2.50	1.90	1.70	1.60	1.60	2.10	2.30
22.....	3.20	3.20	3.10	2.60	2.50	2.40	1.90	1.70	1.60	1.60	1.90	3.80
23.....	2.90	4.70	3.00	2.60	2.50	2.40	2.10	1.70	1.60	1.60	1.90	3.20
24.....	2.90	4.90	2.90	2.60	2.40	2.40	1.90	1.70	1.60	1.60	1.80	3.00
25.....	2.50	5.40	2.80	2.50	2.30	2.40	1.90	1.70	1.60	1.60	1.80	2.60
26.....	2.50	5.80	2.80	2.50	2.70	2.30	2.10	1.60	1.60	1.60	2.40	2.40
27.....	2.50	6.30	2.80	2.50	2.50	2.20	1.90	1.60	1.60	2.00	2.40	2.25
28.....	2.60	7.60	2.70	2.40	2.50	2.20	1.90	1.60	1.60	3.80	2.20	2.15
29.....	2.80		3.80	2.40	2.40	2.20	1.90	1.60	1.60	2.70	2.10	2.10
30.....	2.90		9.90	2.30	2.10	2.20	2.00	1.60	1.70	2.70	1.80	2.10
31.....	3.00		6.20		2.00		2.10	1.60		2.00		2.30



MEAN DAILY GAGE HEIGHT, IN FEET, OF CATAWBA RIVER NEAR ROCKHILL, S. C., FOR 1903.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.
1.....	2.20	2.40	8.87	8.00	2.80	2.80	2.40
2.....	2.10	2.30	6.50	5.35	2.75	2.80	2.20
3.....	10.00	2.20	4.20	4.40	2.70	3.20	2.20
4.....	8.50	2.40	3.50	4.10	2.70	3.20	2.15
5.....	5.70	6.15	3.20	4.20	2.70	3.00	2.15
6.....	3.90	5.20	3.10	3.90	2.70	3.30	2.70
7.....	3.20	3.50	3.00	3.50	2.70	10.45	2.95
8.....	2.90	8.37	3.50	3.20	2.60	7.20	2.40
9.....	2.60	7.80	3.55	10.15	2.60	4.60	2.40
10.....	2.50	5.10	5.40	7.90	2.60	3.40	2.20
11.....	2.30	4.10	4.30	5.10	2.55	5.50	2.10
12.....	3.10	7.02	4.90	4.10	2.50	4.40	2.00
13.....	3.00	5.90	4.80	5.80	2.50	3.50	2.15
14.....	2.70	4.15	4.80	9.35	2.50	3.00	2.30
15.....	2.40	3.40	3.50	8.70	2.50	2.80	2.40
16.....	2.40	3.20	3.25	5.70	2.50	2.60	2.20
17.....	2.35	10.25	3.10	4.40	2.50	2.50	2.00
18.....	2.30	9.70	2.95	3.85	2.40	2.50	2.00
19.....	2.20	5.40	2.85	3.60	2.40	2.45	2.00
20.....	2.20	3.80	2.80	3.55	2.35	2.40	2.00
21.....	2.30	3.35	2.70	3.50	2.30	2.70	2.00
22.....	2.50	3.15	6.45	3.60	2.30	2.40	1.95
23.....	2.65	2.90	13.30	3.35	2.30	2.90	1.90
24.....	2.50	2.80	18.00	3.20	2.30	4.20	1.90
25.....	2.40	2.75	11.40	3.10	2.25	3.00	1.90
26.....	2.30	2.65	5.70	3.10	2.25	2.50	1.85
27.....	2.25	2.60	4.10	3.30	2.25	2.80	1.80
28.....	2.40	3.80	3.80	3.10	2.20	2.60	1.80
29.....	2.50		3.50	2.90	2.30	2.50	1.80
30.....	2.60		6.85	2.80	2.20	2.40	2.70
31.....	2.50		11.30		2.40		2.10

RATING TABLE FOR CATAWBA RIVER AT ROCKHILL, S. C.  
 [This table is applicable from September, 1895, to December, 1896.]

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.20	1,140	4.20	8,720	7.20	21,900	10.20	36,500
1.40	1,260	4.40	9,340	7.40	22,800	10.40	37,500
1.60	1,400	4.60	10,150	7.60	23,700	10.60	38,500
1.80	1,550	4.80	11,050	7.80	24,600	10.80	39,500
2.00	1,900	5.00	12,000	8.00	25,500	11.00	40,500
2.20	2,520	5.20	12,900	8.20	26,500	11.20	41,500
2.40	3,140	5.40	13,800	8.40	27,500	11.40	42,500
2.60	3,760	5.60	14,700	8.60	28,500	11.60	43,500
2.80	4,380	5.80	15,600	8.80	29,500	11.80	44,500
3.00	5,000	6.00	16,500	9.00	30,500	12.00	45,500
3.20	5,620	6.20	17,400	9.20	31,500	12.20	46,500
3.40	6,240	6.40	18,300	9.40	32,500	12.40	47,500
3.60	6,860	6.60	19,200	9.60	33,500	12.60	48,500
3.80	7,480	6.80	20,100	9.80	34,500	12.80	49,500
4.00	8,100	7.00	21,000	10.00	35,500	13.00	50,500

RATING TABLE FOR CATAWBA RIVER NEAR ROCKHILL, S. C., FOR 1897.

Gage Height.	Discharge.		Gage Height.	Discharge.		Gage Height.	Discharge.		Gage Height.	Discharge.	
	Jan. 1 to Feb. 6.	Feb. 7 to Dec. 31.		Jan. 1 to Feb. 6.	Feb. 7 to Dec. 31.		Jan. 1 to Feb. 6.	Feb. 7 to Dec. 31.		Jan. 1 to Feb. 6.	Feb. 7 to Dec. 31.
1.00	-----	1,600	2.40	2,700	3,450	5.00	9,800	9.00	25,500		
1.20	-----	1,700	2.60	3,100	3,800	5.50	11,300	10.00	31,000		
1.40	1,250	1,900	2.80	3,500	4,200	6.00	13,000	11.00	38,000		
1.60	1,450	2,200	3.00	3,900	4,600	6.50	14,750	12.00	45,300		
1.80	1,700	2,500	3.50	5,050	5,750	7.00	16,550	13.00	52,700		
2.00	2,000	2,800	4.00	6,400	7,000	7.50	18,500	14.00	60,100		
2.20	2,350	3,100	4.50	8,050	8,375	8.00	20,500	15.00	67,500		

RATING TABLE FOR CATAWBA RIVER NEAR ROCKHILL, S. C., FOR 1898.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.0	1,800	3.4	7,510	5.8	15,280	10.0	35,000
1.2	2,100	3.6	8,100	6.0	16,000	10.5	37,500
1.4	2,430	3.8	8,700	6.2	16,800	11.0	40,000
1.6	2,810	4.0	9,300	6.4	17,600	11.5	42,750
1.8	3,240	4.2	9,900	6.6	18,400	12.0	45,500
2.0	3,700	4.4	10,500	6.8	19,200	12.5	49,550
2.2	4,220	4.6	11,120	7.0	20,000	13.0	53,600
2.4	4,740	4.8	11,760	7.5	22,500	13.5	57,700
2.6	5,270	5.0	12,400	8.0	25,000	14.0	61,800
2.8	5,810	5.2	13,120	8.5	27,500		
3.0	6,350	5.4	13,840	9.0	30,000		
3.2	6,930	5.6	14,560	9.5	32,500		

RATING TABLE FOR CATAWBA RIVER NEAR ROCKHILL, S. C., FOR 1899 AND 1900.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.4	1,550	3.4	7,516	5.4	16,356	9.5	34,478
1.6	1,750	3.6	8,400	5.6	17,240	10.0	36,688
1.8	2,030	3.8	9,284	5.8	18,124	11.0	40,108
2.0	2,300	4.0	10,168	6.0	19,008	12.0	45,228
2.2	2,830	4.2	11,052	6.5	21,218	13.0	49,948
2.4	3,380	4.4	11,936	7.0	23,428	14.0	54,368
2.6	4,060	4.6	12,820	7.5	25,638	15.0	58,788
2.8	4,880	4.8	13,704	8.0	27,848	16.0	62,208
3.0	5,750	5.0	14,588	8.5	30,058	17.0	67,628
3.2	6,632	5.2	15,472	9.0	32,268		

RATING TABLE FOR CATAWBA RIVER NEAR ROCKHILL, S. C., FOR 1901.

1.8	3,505	4.6	10,100	7.4	21,300	13.5	56,500
2.0	3,825	4.8	10,800	7.6	22,200	14.0	60,250
2.2	4,145	5.0	11,500	7.8	23,100	14.5	64,125
2.4	4,465	5.2	12,200	8.0	24,000	15.0	68,000
2.6	4,880	5.4	12,900	8.5	26,500	15.5	72,000
2.8	5,300	5.6	13,650	9.0	29,000	16.0	76,000
3.0	5,750	5.8	14,450	9.5	31,500	16.5	80,250
3.2	6,250	6.0	15,250	10.0	34,000	17.0	84,500
3.4	6,750	6.2	16,050	10.5	36,750	17.5	88,750
3.6	7,250	6.4	16,850	11.0	39,500	18.0	93,000
3.8	7,750	6.6	17,700	11.5	42,500	19.0	102,000
4.0	8,250	6.8	18,600	12.0	45,500	20.0	111,000
4.2	8,850	7.0	19,500	12.5	49,000	25.0	159,250
4.4	9,450	7.2	20,400	13.0	52,750	----	-----

RATING TABLE FOR CATAWBA RIVER NEAR ROCKHILL, S. C., FROM JANUARY 1, 1902, TO JULY 31, 1903.

1.8	3,100	3.3	6,550	4.8	10,800	6.3	16,450
1.9	3,325	3.4	6,800	4.9	11,150	6.4	16,850
2.0	3,550	3.5	7,050	5.0	11,500	6.5	17,275
2.1	3,775	3.6	7,300	5.1	11,850	6.6	17,700
2.2	4,000	3.7	7,550	5.2	12,200	6.7	18,150
2.3	4,225	3.8	7,800	5.3	12,550	6.8	18,600
2.4	4,450	3.9	8,050	5.4	12,900	6.9	19,050
2.5	4,675	4.0	8,300	5.5	13,275	7.0	19,500
2.6	4,900	4.1	8,600	5.6	13,650	7.5	21,750
2.7	5,125	4.2	8,900	5.7	14,050	8.0	24,000
2.8	5,350	4.3	9,200	5.8	14,450	8.5	26,500
2.9	5,575	4.4	9,500	5.9	14,850	9.0	29,000
3.0	5,800	4.5	9,800	6.0	15,250	9.5	31,500
3.1	6,050	4.6	10,100	6.1	15,650	10.0	34,000
3.2	6,300	4.7	10,450	6.2	16,050	10.5	36,750

Table for 1903 same as 1902. Above 4.6 feet, gage height, 1901 and 1902 rating tables are the same.

## ESTIMATED MONTHLY DISCHARGE OF CATAWBA RIVER NEAR ROCKHILL, S. C.

[Drainage area, 2,987 square miles.]

Month.	Discharge in Second-feet.			Total in Acre-feet.	Run-off.	
	Maxi- mum.	Mini- mum.	Mean.		Depth in Inches.	Second- feet per Square Mile.
1895.						
September 23 to 30.....	1,350	1,300	1,318	20,912	0.13	0.44
October.....	1,400	1,300	1,364	83,809	0.53	0.46
November 1 to 9, 17 to 30.....	2,237	1,400	1,546	70,518	0.44	0.52
December.....	6,860	1,400	2,192	134,782	0.84	0.73
1896.						
January.....	9,700	1,550	3,062	188,275	1.19	1.03
February.....	19,850	2,237	6,093	350,473	2.20	2.04
March.....	2,851	1,700	2,009	123,528	0.77	0.67
April.....	16,040	1,470	2,645	157,389	0.99	0.89
May.....	9,060	1,400	2,277	140,008	0.87	0.76
June.....	5,620	1,330	2,014	119,841	0.74	0.67
July.....	*62,500	1,400	10,215	628,095	3.95	3.42
August.....	1,930	1,330	1,604	98,626	0.62	0.54
September.....	9,060	1,330	1,873	111,451	0.70	0.63
October.....	7,790	1,330	1,670	102,684	0.64	0.56
November.....	14,120	1,400	2,661	188,340	0.99	0.89
December.....	14,600	1,550	3,169	194,855	1.22	1.06
The year.....	*62,500	1,330	3,274	2,373,565	14.88	1.10
1897.						
January.....	5,550	1,575	2,097	128,940	0.81	0.70
February.....	65,650	1,775	9,277	515,220	3.24	3.11
March.....	19,300	3,275	7,537	463,430	2.91	2.82
April.....	54,920	3,100	7,055	419,800	2.63	2.36
May.....	8,100	2,650	3,571	219,575	1.38	1.20
June.....	7,825	2,200	3,128	186,130	1.17	1.05
July.....	10,550	2,050	2,900	178,315	1.12	0.97
August.....	8,925	1,975	2,587	159,070	1.00	0.87
September.....	2,200	1,700	1,817	108,120	0.68	0.61
October.....	9,200	1,700	2,311	142,100	0.89	0.77
November.....	4,000	1,900	2,186	130,075	0.81	0.73
December.....	3,100	2,125	2,523	155,135	0.97	0.84
The year.....	65,650	1,575	3,916	2,806,120	17.61	1.31
1898.						
January.....	9,450	2,810	3,652	224,554	1.41	1.22
February.....	3,700	2,610	2,968	164,834	1.03	0.99
March.....	18,400	2,610	3,674	225,907	1.42	1.23
April.....	10,500	2,610	4,090	243,371	1.53	1.37
May.....	4,480	2,100	2,747	168,908	1.06	0.92
June.....	7,220	1,800	2,650	157,686	0.99	0.89
July.....	9,700	1,800	3,824	235,130	1.48	1.28
August.....	22,500	3,240	6,355	390,756	2.46	2.13
September.....			†6,042	†359,524	†2.25	†2.02
October.....	36,500	4,480	10,489	444,947	4.05	3.51
November.....	6,640	5,000	5,523	328,641	2.06	1.85
December.....	12,080	4,480	6,185	350,303	2.39	2.07
The year.....	36,500	1,800	4,850	3,524,561	22.13	1.62

\*Estimated. †Approximate.

ESTIMATED MONTHLY DISCHARGE OF CATAWBA RIVER NEAR ROCKHILL, S. C.—Continued.  
[Drainage area, 2,987 square miles.]

Month.	Discharge in Second-feet.			Total in Acre-feet.	Run-off.	
	Maxi- mum.	Mini- mum.	Mean.		Second- feet per Square Mile.	Depth in Inches.
1899.						
January.....	29,174	2,830	6,144	377,780	2.06	2.37
February.....	43,202	3,090	13,670	659,193	4.58	4.76
March.....	66,965	4,060	17,486	1,075,172	5.85	6.74
April.....	22,986	4,890	8,505	506,083	2.85	3.17
May.....	11,494	3,090	4,702	289,115	1.57	1.81
June.....	5,310	2,390	2,916	173,514	0.98	1.09
July.....	4,460	1,890	2,317	142,467	0.78	0.90
August.....	3,380	1,640	2,152	132,321	0.72	0.83
September.....	7,958	1,640	2,479	147,511	0.83	0.92
October.....	3,380	1,640	1,914	117,687	0.64	0.74
November.....	2,600	1,640	1,853	110,261	0.62	0.69
December.....	8,400	1,750	2,963	182,188	0.99	1.14
The year.....	66,965	1,640	5,592	4,013,292	1.87	25.16
1900.						
January.....	13,262	2,030	3,979	244,659	1.33	1.53
February.....	46,854	2,390	8,707	483,562	2.91	3.03
March.....	45,086	3,090	10,425	641,008	3.49	4.02
April 1 to 19.....			5,734	216,091	1.92	1.36
May 12 to 31.....			4,278	203,044	1.43	1.65
June.....	22,323	2,830	7,617	453,243	2.55	2.84
July.....	5,750	2,200	3,291	202,356	1.10	1.27
August.....	3,090	1,750	2,169	133,367	0.73	0.84
September.....	6,632	1,460	2,037	121,210	0.68	0.76
October.....	42,434	1,505	4,220	259,478	1.41	1.63
November.....	19,450	1,880	3,317	197,375	1.11	1.24
December.....	11,052	2,030	4,379	269,254	1.47	1.69
1901.						
January.....	26,500	3,825	5,245		1.76	2.03
February.....	7,750	3,665	4,240		1.42	1.48
March.....	57,250	3,505	7,219		2.42	2.79
April.....	107,850	4,625	15,812		5.29	5.90
May.....	127,850	4,145	14,302		4.79	5.52
June.....	30,000	4,625	9,211		3.08	3.44
July.....	20,400	3,825	6,159		2.06	2.37
August.....	64,125	3,825	18,983		6.36	7.34
September.....	14,850	4,850	7,130		2.39	2.67
October.....	8,550	4,145	4,980		1.67	1.93
November.....	4,545	3,985	4,121		1.38	1.54
December.....	98,850	3,825	13,775		4.61	5.31
The year.....	127,850	3,505	9,265		3.10	42.32

ESTIMATED MONTHLY DISCHARGE OF CATAWBA RIVER AT ROCKHILL, S. C.—Continued.  
[Drainage area, 2,987 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maxi- mum.	Mini- mum.	Mean.	Second- feet per Square Mile.	Depth in Inches.
1902.					
January.....	21,750	4,675	6,019	2.02	2.33
February.....	29,000	4,900	8,846	2.96	3.06
March.....	70,400	5,125	11,724	3.93	4.53
April.....	8,600	4,225	5,368	1.80	2.01
May.....	5,125	3,550	4,290	1.44	1.66
June.....	79,400	3,325	7,580	2.54	2.93
July.....	4,900	3,325	3,717	1.24	1.43
August.....	15,250	2,700	3,634	1.22	1.41
September.....	13,275	2,700	3,651	1.22	1.36
October.....	7,800	2,700	3,804	1.27	1.46
November.....	15,650	2,900	3,830	1.28	1.43
December.....	13,650	3,775	5,686	1.90	2.19
The year.....	79,400	2,700	5,512	1.90	25.82
1903.					
January.....	34,000	3,775	6,728	2.25	2.59
February.....	35,375	4,000	11,183	3.74	3.99
March.....	93,000	5,125	15,952	5.34	6.16
April.....	34,825	5,350	11,518	3.86	4.31
May.....	5,350	4,000	4,610	1.54	1.78
June.....	36,470	4,450	7,585	2.54	2.83
July.....	5,687	3,100	3,883	1.30	1.50

#### CATAWBA RIVER AT CATAWBA, N. C.

This station was originally established in July, 1896, but was abandoned December 31, 1899. On June 13, 1900, it was re-established as a temporary station to assist in the study of the hydrography of the southern Appalachian region. The measurements are made from the Southern Railway bridge, about one-half mile from Catawba, N. C. The river is straight above and below the bridge; the current is swift and evenly distributed across the stream. The channel is obstructed by three piers. At time of highest water the west bank overflows slightly and the sandy bed cuts out in places. Discharge measurements were made from the plank walk underneath the bridge. The railway bridge here is a deck bridge, and the wire gage was located on a footway which was laid along the lower system of bracing.

The station was again abandoned in April, 1902, as the section had been so badly injured by floods and by repairs to the bridge that it was almost worthless as a point of measurement.

## DISCHARGE MEASUREMENTS OF CATAWBA RIVER AT CATAWBA, N. C.

Date.	Hydrographer.	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1896.					
June 30	E. W. Myers.....	938	1.11	2.25	1,044
July 4	do.....	1,238	1.83	3.03	2,266
Aug. 30	do.....	743	0.98	1.45	732
Sept. 13	do.....	1,059	1.37	1.94	1,458
1897.					
Feb. 8	E. W. Myers.....	2,915	3.33	5.52	9,711
Aug. 3	do.....	975	1.39	1.90	1,358
Oct. 5	do.....	825	0.93	1.60	775
Oct. 26	A. P. Davis.....	1,098	1.16	1.82	1,279
1898.					
Jan. 14	E. W. Myers.....	1,072	1.14	2.01	1,228
Date.	Hydrographer.			Gage Height (Feet).	Discharge. (Second- feet).
1899.					
Feb. 24	.....			3.26	3,598
Feb. 24	.....			3.28	3,690
June 10	.....			2.94	2,820
Oct. 9	.....			2.36	1,716
Nov. 23	.....			2.20	1,118
Dec. 16	.....			2.66	2,153
1900.					
July 3	.....			3.45	3,372
Aug. 14	.....			2.10	914
Nov. 7	.....			2.95	2,083
Dec. 18	.....			2.59	2,139
1901.					
Mar 29	.....			5.83	5,640
Apr. 27	.....			4.37	4,354
July 25	.....			2.95	2,805
Nov. 15	.....			2.20	2,398

DAILY GAGE HEIGHT, IN FEET, OF CATAWBA RIVER AT CATAWBA, N. C., FOR 1896.

Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....		2.25	1.65	2.45	1.68	5.58	17.....	2.98	2.08	1.82	1.48	1.92	3.28
2.....		2.25	1.85	2.25	1.65	5.32	18.....	2.92	1.88	1.62	1.48	1.92	2.95
3.....		2.22	1.48	1.92	1.58	3.32	19.....	2.78	1.82	1.52	1.48	1.92	2.95
4.....	3.05	2.28	1.45	1.65	1.88	2.65	20.....	2.75	1.68	1.58	1.48	1.92	2.42
5.....	2.95	2.15	3.32	1.52	7.38	2.65	21.....	2.62	1.68	1.52	1.58	1.92	2.22
6.....	4.32	2.05	2.32	1.58	3.92	2.32	22.....	2.72	1.62	1.55	1.50	1.88	2.05
7.....	3.82	1.98	2.32	1.58	3.35	2.32	23.....	2.72	1.65	1.52	1.52	1.85	2.00
8.....	5.75	1.92	1.72	1.55	2.32	2.18	24.....	2.62	1.68	1.52	1.58	1.85	2.12
9.....	5.00	1.92	1.62	1.52	2.12	2.12	25.....	2.52	1.65	1.52	1.58	1.78	1.98
10.....	7.72	1.95	1.52	1.52	1.95	2.10	26.....	2.48	1.62	1.48	1.52	1.75	1.95
11.....	7.48	2.02	1.52	1.52	1.88	1.98	27.....	2.42	1.62	1.48	1.52	1.72	1.85
12.....	5.95	1.98	1.72	1.55	1.88	1.98	28.....	2.92	1.52	1.52	1.52	1.72	1.90
13.....	5.25	1.92	1.95	1.55	1.85	1.98	29.....	2.48	1.52	1.55	1.55	2.98	1.90
14.....	4.38	1.88	1.68	1.68	1.82	1.95	30.....	2.35	1.65	4.02	1.55	7.42	1.90
15.....	3.58	2.02	1.62	1.62	1.92	3.78	31.....	2.28	1.85		1.68		1.90
16.....	3.32	2.15	1.62	1.52	1.92	3.68							

DAILY GAGE HEIGHT, IN FEET, OF CATAWBA RIVER AT CATAWBA, N. C., FOR 1897.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	1.82	2.25	2.75	2.85	6.00	2.15	2.00	1.95	1.70	1.60	2.00	2.15
2.....	1.85	4.00	2.45	2.90	4.00	2.10	2.00	1.85	1.70	1.60	3.00	2.10
3.....	1.88	3.65	2.35	4.00	3.90	2.05	2.00	1.80	1.65	1.60	2.50	2.05
4.....	1.82	3.10	2.30	4.25	3.45	2.00	2.00	2.30	1.65	1.60	2.00	2.05
5.....	2.22	2.60	2.25	16.00	3.20	2.75	2.05	2.90	1.70	1.60	1.90	2.00
6.....	2.00	15.90	8.27	8.20	2.90	2.50	2.30	3.00	1.70	1.60	1.85	2.00
7.....	1.95	9.62	4.50	5.75	2.80	2.90	2.20	2.60	1.70	1.60	1.85	1.95
8.....	1.90	5.82	2.90	3.90	2.70	3.40	3.30	2.50	1.70	1.60	1.85	1.90
9.....	1.90	3.90	5.50	4.00	2.70	3.40	2.80	2.60	1.70	1.60	1.75	1.90
10.....	1.95	3.60	6.00	3.80	2.75	2.90	2.50	2.50	1.70	1.70	1.75	1.90
11.....	1.95	3.40	5.50	3.60	2.80	2.65	2.30	2.40	1.70	3.00	1.70	1.90
12.....	1.95	4.65	5.00	3.25	2.80	2.40	2.25	2.25	1.70	8.00	1.70	1.90
13.....	1.95	4.10	6.20	3.02	4.20	2.35	2.40	2.10	1.70	4.00	1.70	1.85
14.....	1.95	3.50	6.00	3.00	3.30	2.30	2.30	2.00	1.70	2.50	1.70	1.85
15.....	1.95	3.40	5.90	3.05	2.90	2.25	2.25	2.00	1.70	2.00	1.70	1.85
16.....	2.00	4.20	5.80	3.02	2.50	2.20	2.25	1.90	1.70	1.90	1.70	1.85
17.....	2.00	3.80	5.50	3.00	2.45	2.35	2.30	1.85	1.70	1.90	1.70	1.85
18.....	2.20	7.80	4.40	2.95	2.45	2.40	2.30	1.80	1.70	2.50	1.70	1.85
19.....	2.00	2.75	4.00	2.85	2.40	2.50	2.25	1.80	1.70	2.40	1.70	1.85
20.....	2.20	2.85	4.75	2.85	2.40	2.30	2.30	1.80	1.70	2.25	1.70	1.90
21.....	4.45	3.20	4.30	2.80	2.40	2.20	2.90	1.80	1.70	2.00	1.70	2.50
22.....	3.80	3.10	3.70	2.82	2.30	2.15	2.75	1.75	1.80	1.90	1.70	2.50
23.....	3.25	10.10	3.40	2.80	2.25	2.10	2.75	1.75	2.10	1.80	1.70	2.40
24.....	2.45	7.00	3.20	2.78	2.20	2.10	2.80	1.75	2.05	1.75	1.70	2.30
25.....	2.30	4.25	3.00	2.75	2.20	2.10	2.75	1.75	2.00	1.75	1.70	2.25
26.....	2.20	3.60	2.95	2.75	2.50	2.05	2.60	1.70	2.00	1.80	2.50	2.25
27.....	2.15	3.05	2.85	2.75	2.30	2.05	2.70	1.70	1.95	1.80	3.00	2.20
28.....	2.00	2.90	2.80	2.75	2.25	2.00	2.60	1.70	1.90	1.80	2.50	2.20
29.....	1.85		2.82	2.80	2.20	2.00	2.50	1.70	1.80	1.80	2.25	2.15
30.....	2.50		2.85	3.90	2.20	2.00	2.35	1.70	1.70	1.75	2.20	2.15
31.....	2.35		2.85		2.15		2.15	1.70		1.70		2.00



## DAILY GAGE HEIGHT, IN FEET, OF CATAWBA RIVER AT CATAWBA, N. C., FOR 1898-1899.

1898.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	2.00	2.20	1.95	3.30	2.10	1.90	1.80	3.45	2.90	3.70	3.10	2.60
2.....	2.00	2.10	1.95	3.00	2.10	1.90	1.80	3.40	2.60	3.00	2.95	2.60
3.....	2.00	2.05	1.90	2.60	2.10	1.80	1.80	3.00	3.30	3.50	2.80	2.60
4.....	1.95	2.00	1.90	2.40	2.05	1.80	1.80	2.75	5.50	9.70	2.80	4.50
5.....	1.90	2.00	1.90	3.00	2.25	1.80	2.00	9.65	5.65	11.50	2.28	5.60
6.....	1.90	2.00	1.90	2.90	2.60	1.80	2.50	4.30	4.35	7.20	2.75	3.90
7.....	2.00	2.00	1.90	2.60	2.50	1.80	2.35	4.00	4.90	6.10	2.70	3.40
8.....	2.05	2.00	1.90	2.30	2.35	1.80	2.50	3.50	3.90	5.00	2.65	3.00
9.....	2.00	2.00	1.90	2.20	2.25	1.75	2.80	3.55	3.60	4.10	2.60	2.90
10.....	1.95	2.00	1.90	2.15	2.15	1.75	2.35	3.70	3.15	3.80	2.60	2.85
11.....	1.95	2.00	1.90	2.15	2.05	1.75	2.00	4.60	2.60	3.60	2.60	2.80
12.....	2.00	2.00	1.90	2.10	2.00	1.75	2.00	6.50	2.40	3.40	2.60	2.70
13.....	2.00	2.00	1.90	2.10	2.00	1.70	1.85	4.80	2.35	3.20	2.60	2.70
14.....	2.00	2.00	1.90	2.10	1.95	1.70	4.20	3.50	2.30	3.10	2.70	2.65
15.....	2.00	2.00	1.90	2.10	1.90	1.90	7.00	3.20	2.30	2.95	2.75	2.50
16.....	1.95	1.95	1.90	2.40	1.90	2.00	4.10	3.10	2.20	2.80	2.75	2.50
17.....	1.95	1.95	2.00	2.30	1.90	3.50	4.00	2.90	2.10	2.80	2.80	2.50
18.....	1.95	1.95	2.10	2.25	1.90	2.80	3.70	2.90	2.10	3.40	3.00	2.50
19.....	1.95	1.95	2.05	2.20	1.85	2.00	3.10	4.30	2.10	3.20	3.30	2.50
20.....	2.25	1.95	2.05	2.20	1.85	1.95	2.50	4.30	2.10	3.50	3.20	2.50
21.....	3.00	2.00	2.00	2.20	1.85	1.95	2.40	4.00	2.05	8.30	3.00	2.90
22.....	3.00	2.00	2.00	2.20	1.85	1.80	2.40	3.20	2.40	7.45	2.80	3.00
23.....	2.75	2.00	2.00	2.30	1.85	1.80	3.00	3.00	19.95	6.60	2.95	3.15
24.....	2.50	1.95	2.00	2.25	3.50	1.80	4.50	2.50	11.60	5.00	3.10	3.25
25.....	3.00	1.95	1.95	2.20	2.50	1.80	3.90	2.50	5.70	4.10	3.00	3.10
26.....	5.50	1.95	1.95	2.15	2.20	1.80	3.30	2.60	5.40	3.80	2.85	3.00
27.....	3.40	1.95	2.90	2.10	2.00	1.80	2.80	2.55	4.90	3.50	2.70	3.00
28.....	3.00	1.95	3.00	2.10	1.90	1.85	3.40	2.45	4.10	3.30	2.70	2.90
29.....	2.75		3.50	2.10	1.95	1.80	3.50	5.60	3.40	3.30	2.70	2.85
30.....	2.40		7.50	2.10	1.95	1.80	3.10	3.30	3.30	3.30	2.65	2.85
31.....	2.30		5.50		1.95		3.50	3.10		3.20		2.90
1899.												
1.....	3.50	2.70	5.45	4.65	3.40	2.95	2.40	2.20	2.40	1.95	2.10	2.10
2.....	3.10	2.70	4.30	4.40	3.40	2.00	2.35	2.25	2.90	1.95	2.15	2.15
3.....	3.00	2.80	4.00	3.90	3.35	2.90	2.30	2.20	2.75	1.95	2.10	2.15
4.....	2.80	10.00	4.00	3.95	3.30	2.80	2.30	2.15	2.60	1.90	2.15	2.15
5.....	2.80	8.60	7.40	4.60	3.30	2.75	2.35	2.10	2.40	1.90	2.20	2.15
6.....	5.20	9.60	5.90	4.40	3.25	2.70	2.40	2.10	2.20	2.00	2.18	2.15
7.....	8.00	9.10	4.30	5.70	4.90	2.65	2.50	2.30	2.20	2.10	2.18	2.10
8.....	4.70	6.50	4.15	8.90	4.70	2.60	2.60	2.40	2.25	2.20	2.15	2.10
9.....	4.40	5.60	4.00	5.75	4.25	3.35	2.50	2.35	2.30	2.36	2.10	2.10
10.....	4.00	4.30	3.80	5.10	3.85	2.92	2.40	2.80	2.50	2.30	2.10	2.10
11.....	3.90	3.60	3.70	4.50	3.60	2.90	2.40	2.60	2.40	2.25	2.10	2.15
12.....	3.90	3.30	3.60	4.30	3.75	3.35	2.35	2.40	2.20	2.20	2.10	6.50
13.....	3.80	2.90	3.55	4.10	5.10	3.25	2.30	2.40	2.00	2.18	2.10	6.10
14.....	3.50	2.90	3.50	4.00	3.80	3.15	2.20	2.00	2.00	2.15	2.10	3.30
15.....	3.80	2.90	16.50	3.90	3.60	3.05	2.20	2.10	2.00	2.10	2.10	2.90
16.....	3.60	4.20	11.10	3.80	3.40	2.95	2.20	2.00	2.00	2.05	2.10	2.60
17.....	3.30	7.30	6.70	3.70	3.20	2.90	2.20	2.00	2.00	2.05	2.05	2.55
18.....	3.10	5.00	6.80	3.60	3.05	2.90	2.25	2.00	2.00	2.05	2.05	2.50
19.....	3.00	4.30	22.80	3.50	3.00	2.80	2.20	2.00	2.85	2.10	2.05	2.50
20.....	2.90	4.00	15.80	3.50	2.95	2.70	2.18	2.00	2.30	2.10	2.05	2.45
21.....	2.80	3.75	7.30	3.50	2.90	2.60	2.15	2.00	2.15	2.10	2.00	2.35
22.....	2.70	3.50	6.90	3.50	2.95	2.50	2.15	2.00	2.00	2.10	2.00	2.25
23.....	2.70	3.40	5.90	3.50	3.00	2.40	2.15	2.00	2.00	2.10	2.00	3.00
24.....	2.70	3.25	5.30	3.50	2.90	2.30	2.15	2.00	2.00	2.10	2.00	3.10
25.....	3.00	3.20	4.80	3.70	2.85	2.30	2.15	2.05	2.00	2.08	2.00	3.10
26.....	2.85	3.70	4.70	4.50	2.80	2.60	3.70	2.03	1.95	2.08	2.05	3.08
27.....	2.70	13.30	6.50	4.25	2.80	2.50	3.30	2.05	1.95	2.05	2.05	3.05
28.....	2.70	6.00	6.50	3.10	2.80	2.40	2.70	2.10	2.00	2.05	2.05	3.05
29.....	2.70		6.00	3.40	2.80	2.40	2.40	2.25	2.00	2.03	2.10	3.00
30.....	2.70		5.50	3.80	2.80	2.40	2.35	2.35	1.95	2.00	2.10	3.50
31.....	2.70		5.00		2.80		2.30	4.00		2.05		3.65

DAILY GAGE HEIGHT, IN FEET, OF CATAWBA RIVER AT CATAWBA, N. C., FOR 1900.

Day.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....		3.15	2.80	(*)	3.55	3.70	2.85
2.....		2.65	2.70	(*)	3.60	3.50	2.85
3.....		3.35	2.55	1.80	3.65	3.10	3.40
4.....		3.15	2.40	1.72	3.70	4.10	4.50
5.....		3.10	2.40	1.75	3.70	3.20	4.10
6.....		3.00	2.40	1.90	4.20	3.10	3.85
7.....		2.90	2.40	1.85	3.90	3.10	3.45
8.....		2.90	2.35	1.80	3.85	2.95	3.15
9.....		2.80	2.30	1.78	3.80	2.75	3.00
10.....		2.75	2.30	1.72	3.75	2.75	2.95
11.....		2.65	2.30	1.70	3.75	2.75	2.95
12.....		2.60	2.25	1.75	3.75	2.75	2.80
13.....	2.35	2.60	2.25	1.75	3.70	2.75	2.85
14.....	2.80	2.55	2.25	1.65	3.60	2.75	2.80
15.....	3.15	2.50	(*)	1.85	3.60	2.70	2.70
16.....	4.85	2.50	(*)	5.00	3.60	2.65	2.75
17.....	8.65	2.50	(*)	5.70	3.60	2.60	2.75
18.....	7.50	2.50	(*)	4.40	3.65	2.50	2.60
19.....	5.05	2.50	(*)	3.55	3.70	2.55	2.60
20.....	4.55	2.50	(*)	3.10	3.65	2.55	3.10
21.....	3.45	2.50	(*)	3.30	3.60	2.60	4.85
22.....	4.75	2.50	(*)	3.55	3.75	2.60	5.20
23.....	6.14	2.30	(*)	3.55	4.10	2.50	4.75
24.....	5.75	2.70	(*)	3.55	20.20	2.45	4.20
25.....	5.65	2.70	(*)	3.50	7.40	3.60	3.80
26.....	5.40	3.25	(*)	3.45	5.70	9.10	3.35
27.....	4.15	3.20	(*)	3.40	4.90	5.00	3.15
28.....	3.65	2.90	(*)	3.38	4.70	4.10	3.00
29.....	3.45	2.70	(*)	3.30	4.45	3.60	3.10
30.....	3.30	2.70	(*)	3.40	4.35	3.25	3.35
31.....		3.00	(*)		3.90		4.05

\*No record.

DAILY GAGE HEIGHT, IN FEET, OF CATAWBA RIVER AT CATAWBA, N. C., FOR 1901.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	5.40	2.80	3.00	5.50	3.90	4.40	2.95	2.60	6.30	4.20	2.35	2.10
2.....	3.35	2.85	2.98	8.50	3.85	3.30	2.55	2.55	5.20	3.50	2.35	2.20
3.....	3.25	2.90	2.98	15.10	3.75	3.60	2.40	2.50	4.40	3.20	2.35	2.70
4.....	3.10	4.25	2.98	9.80	3.60	3.40	2.30	2.50	4.15	3.10	2.35	2.80
5.....	3.00	3.40	2.98	6.00	3.50	3.35	2.30	3.30	4.00	2.95	2.50	2.30
6.....	2.95	3.20	2.95	5.10	3.45	5.50	2.30	18.00	3.60	2.70	2.50	2.20
7.....	2.90	3.00	2.95	4.80	3.35	4.50	3.00	10.63	3.40	2.60	2.50	2.20
8.....	2.90	3.15	2.95	4.50	3.40	4.15	4.65	5.35	3.30	2.55	2.50	2.20
9.....	2.85	3.20	2.95	4.40	3.30	3.20	3.60	4.00	3.25	2.45	2.50	2.20
10.....	3.00	3.35	3.00	4.30	3.95	3.13	3.00	4.25	3.20	2.40	2.90	2.20
11.....	3.25	3.20	4.80	4.00	3.70	3.00	3.05	3.80	3.20	2.40	2.20	2.20
12.....	11.55	3.20	4.10	4.00	3.55	2.98	3.00	4.00	3.05	2.40	2.30	2.20
13.....	7.55	3.15	3.50	4.20	3.45	2.90	3.00	6.45	3.00	4.50	2.35	2.20
14.....	5.35	3.15	3.35	6.40	3.30	13.80	3.25	15.60	3.00	2.75	2.20	2.50
15.....	4.10	3.15	3.25	5.00	3.25	10.00	5.10	16.00	3.00	2.45	2.20	16.80
16.....	3.65	3.10	3.10	5.00	3.20	8.60	3.80	11.10	3.00	2.40	2.20	6.00
17.....	3.40	3.10	3.05	4.60	3.35	7.30	3.55	10.70	5.50	2.40	2.15	4.50
18.....	3.30	3.05	3.00	4.25	3.25	6.70	3.40	8.80	4.80	2.40	2.15	3.90
19.....	3.30	3.00	3.10	7.25	4.20	5.70	3.10	6.50	3.30	2.40	2.25	3.70
20.....	3.20	3.00	3.05	24.90	8.65	5.15	6.25	6.00	3.00	2.40	2.25	3.20
21.....	3.00	3.00	3.00	(*)	15.80	5.00	4.25	5.60	3.00	2.40	2.20	2.80
22.....	3.00	2.95	3.00		28.50	5.00	3.70	9.00	2.80	2.40	2.20	2.70
23.....	2.95	2.95	3.00		10.70	6.30	3.40	12.80	2.75	2.40	3.60	2.70
24.....	2.95	3.00	3.00		6.35	4.05	3.10	8.80	2.70	2.40	2.70	2.70
25.....	2.90	3.00	6.70		5.40	3.60	2.95	6.50	2.70	2.40	2.40	2.65
26.....	2.85	2.95	17.50	4.60	5.60	3.55	2.65	5.75	2.60	2.35	2.25	2.60
27.....	2.80	2.95	10.85	4.37	8.70	3.25	3.25	9.10	2.55	2.35	2.25	3.80
28.....	2.80	2.98	7.05	4.20	7.50	3.50	4.50	5.25	3.10	2.35	2.15	4.00
29.....	2.80		5.80	4.00	5.70	3.40	6.35	9.80	4.00	2.35	2.10	19.50
30.....	2.80		5.20	3.80	5.85	3.40	3.25	7.60	4.80	2.35	2.00	11.10
31.....	2.80		5.60		5.35		2.80	6.65		2.35		6.50

\*Gage wire broken from April 21-26.

DAILY GAGE HEIGHT, IN FEET, OF CATAWBA RIVER AT CATAWBA, N. C.

Day.	Jan.	Feb.	Mar.	Apr.	Day.	Jan.	Feb.	Mar.	Apr.
1902.					1902.				
1.....		3.35	11.80	5.35	17.....	2.55	2.60	6.50	.....
2.....		3.35	8.20	4.60	18.....	2.50	2.60	4.20	.....
3.....		4.60	6.50	3.85	19.....	2.50	2.60	3.95	.....
4.....		4.35	5.25	3.25	20.....	2.50	2.60	3.80	.....
5.....	3.25	4.05	4.40	3.00	21.....	2.50	2.85	3.55	.....
6.....	3.20	4.05	3.85	3.00	22.....	2.50	3.60	3.25	.....
7.....	3.20	3.80	3.60	3.00	23.....	2.50	3.35	3.10	.....
8.....	3.15	3.60	3.45	3.20	24.....	2.50	3.10	3.00	.....
9.....	3.05	2.85	3.30	3.05	25.....	2.50	8.20	2.90	.....
10.....	2.90	2.60	3.15	3.00	26.....	2.50	6.70	2.85	.....
11.....	2.80	2.60	3.10	3.00	27.....	2.50	4.75	2.85	.....
12.....	2.80	2.60	3.00	.....	28.....	3.25	19.00	3.90	.....
13.....	2.75	2.60	3.00	.....	29.....	4.10	.....	13.25	.....
14.....	2.70	2.60	3.15	.....	30.....	3.80	.....	6.70	.....
15.....	2.70	2.60	4.10	.....	31.....	3.50	.....	6.10	.....
16.....	2.60	2.60	4.90	.....					

RATING TABLE FOR CATAWBA RIVER AT CATAWBA, N. C., FOR 1896.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.00	540	2.50	1,630	4.00	5,000	5.50	9,500
1.10	570	2.60	1,740	4.10	5,300	5.60	9,800
1.20	610	2.70	1,860	4.20	5,600	5.70	10,100
1.30	655	2.80	1,990	4.30	5,900	5.80	10,400
1.40	710	2.90	2,140	4.40	6,200	5.90	10,700
1.50	770	3.00	2,300	4.50	6,500	6.00	11,000
1.60	835	3.10	2,480	4.60	6,800	6.10	11,300
1.70	910	3.20	2,700	4.70	7,100	6.20	11,600
1.80	980	3.30	2,950	4.80	7,400	6.30	11,900
1.90	1,060	3.40	3,220	4.90	7,700	6.40	12,200
2.00	1,140	3.50	3,500	5.00	8,000	6.50	12,500
2.10	1,230	3.60	3,800	5.10	8,300	6.60	12,800
2.20	1,320	3.70	4,100	5.20	8,600	6.70	13,100
2.30	1,420	3.80	4,400	5.30	8,900	6.80	13,400
2.40	1,530	3.90	4,700	5.40	9,200	6.90	13,700

RATING TABLE FOR CATAWBA RIVER AT CATAWBA, N. C., FOR 1897.

1.5	750	3.8	4,535	6.6	12,795	10.0	22,825
1.6	850	4.0	5,125	6.8	13,385	10.5	24,300
1.7	950	4.2	5,715	7.0	13,975	11.0	25,775
1.8	1,050	4.4	6,305	7.2	14,565	11.5	27,250
1.9	1,160	4.6	6,895	7.4	15,155	12.0	28,725
2.0	1,270	4.8	7,485	7.6	15,745	12.5	30,200
2.2	1,490	5.0	8,075	7.8	16,335	13.0	31,675
2.4	1,730	5.2	8,665	8.0	16,925	13.5	33,150
2.6	1,980	5.4	9,255	8.2	17,515	14.0	34,625
2.8	2,250	5.6	9,845	8.4	18,105	14.5	36,100
3.0	2,560	5.8	10,435	8.6	18,695	15.0	37,575
3.2	2,980	6.0	11,025	8.8	19,285	15.5	39,050
3.4	3,450	6.2	11,615	9.0	19,875	16.0	40,525
3.6	3,960	6.4	12,205	9.5	21,350		

RATING TABLE FOR CATAWBA RIVER AT CATAWBA, N. C., FOR 1898.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.5	750	3.6	4,375	7.2	14,715	13.5	33,300
1.6	870	3.8	4,875	7.4	15,305	14.0	34,775
1.7	1,000	4.0	5,400	7.6	15,895	14.5	36,250
1.8	1,140	4.2	5,940	7.8	16,485	15.0	37,725
1.9	1,280	4.4	6,495	8.0	17,075	15.5	39,200
2.0	1,425	4.6	7,065	8.2	17,665	16.0	40,675
2.1	1,575	4.8	7,640	8.4	18,255	16.5	42,150
2.2	1,725	5.0	8,225	8.6	18,845	17.0	43,650
2.3	1,875	5.2	8,815	8.8	19,435	17.5	45,150
2.4	2,025	5.4	9,405	9.0	20,025	18.0	46,650
2.5	2,175	5.6	9,995	9.5	21,500	18.5	48,150
2.6	2,325	5.8	10,585	10.0	22,975	19.0	49,650
2.7	2,500	6.0	11,175	10.5	24,450	19.5	51,150
2.8	2,675	6.2	11,765	11.0	25,925	20.0	52,650
2.9	2,860	6.4	12,355	11.5	27,400	20.5	54,150
3.0	3,050	6.6	12,945	12.0	28,875	21.0	55,650
3.2	3,450	6.8	13,535	12.5	30,350	21.5	57,150
3.4	3,900	7.0	14,125	13.0	31,825	22.0	58,650

RATING TABLE FOR CATAWBA RIVER AT CATAWBA, N. C., FOR 1899.

1.0	-----	3.4	3,900	7.0	14,125	13.0	31,825
1.2	-----	3.6	4,375	7.5	15,600	13.5	33,300
1.4	-----	3.8	4,875	8.0	17,075	14.0	34,775
1.6	850	4.0	5,400	8.5	18,550	14.5	36,250
1.8	1,050	4.2	5,940	9.0	20,025	15.0	37,725
2.0	1,270	4.4	6,495	9.5	21,500	16.0	40,675
2.2	1,540	4.6	7,065	10.0	22,975	17.0	43,650
2.4	1,840	4.8	7,640	10.5	24,450	18.0	46,650
2.6	2,200	5.0	8,225	11.0	25,925	19.0	49,650
2.8	2,600	5.5	9,700	11.5	27,400	20.0	52,650
3.0	3,000	6.0	11,175	12.0	28,875		
3.2	3,450	6.5	12,650	12.5	30,350		

NOTE.—No rating was made for 1900.

RATING TABLE FOR CATAWBA RIVER AT CATAWBA, N. C., FOR 1901.

2.0	2,000	4.8	4,780	7.6	8,400	14.0	25,250
2.2	2,180	5.0	5,000	7.8	8,700	14.5	27,125
2.4	2,360	5.2	5,240	8.0	9,000	15.0	29,000
2.6	2,540	5.4	5,480	8.5	9,950	15.5	30,637
2.8	2,720	5.6	5,720	9.0	10,900	16.0	32,750
3.0	2,900	5.8	5,960	9.5	12,050	16.5	34,388
3.2	3,100	6.0	6,200	10.0	13,200	17.0	36,500
3.4	3,300	6.2	6,460	10.5	14,450	17.5	38,137
3.6	3,500	6.4	6,720	11.0	15,700	18.0	40,250
3.8	3,700	6.6	6,980	11.5	17,100	19.0	44,000
4.0	3,900	6.8	7,240	12.0	18,500	20.0	47,750
4.2	4,120	7.0	7,500	12.5	20,100	25.0	66,500
4.4	4,340	7.2	7,800	13.0	21,700	30.0	85,250
4.6	4,560	7.4	8,100	13.5	23,475		

## ESTIMATED MONTHLY DISCHARGE OF CATAWBA RIVER AT CATAWBA, N. C.

[Drainage area, 3,492 square miles.]

Month.	Discharge in Second-feet.			Total in Acre-feet.	Run-off.	
	Maxi- mum.	Mini- mum.	Mean.		Depth in Inches.	Second- feet per Square Mile.
1896.						
July 4 to 31.....	*16,100	1,420	4,466	248,024	1.33	1.28
August.....	1,420	770	1,071	65,853	0.36	0.31
September.....	5,000	770	1,090	64,859	0.35	0.31
October.....	1,630	770	865	53,187	0.29	0.25
November.....	*15,200	835	2,222	132,218	0.71	0.64
December.....	9,800	1,060	2,149	132,137	0.71	0.62
1897.						
January.....	6,452	1,050	1,647	101,270	1.23	1.07
February.....	40,230	1,550	7,006	399,095	4.79	4.60
March.....	17,663	1,550	5,637	346,005	4.24	3.67
April.....	40,525	2,180	5,014	298,355	3.64	3.26
May.....	11,025	1,435	2,600	159,870	1.95	1.69
June.....	3,450	1,270	1,833	109,070	1.33	1.19
July.....	3,210	1,270	1,774	109,080	1.34	1.16
August.....	2,560	950	1,321	81,225	0.99	0.86
September.....	1,380	900	1,017	60,515	0.73	0.66
October.....	16,925	850	1,787	109,880	1.35	1.17
November.....	2,560	950	1,233	73,370	0.99	0.80
December.....	1,850	1,105	1,328	81,656	0.99	0.86
The year.....	40,525	850	2,683	1,919,991	23.47	1.75

\*Estimated.

[Drainage area, 1,535 square miles.]

1898.						
January.....	9,700	1,280	2,103	129,310	1.58	1.37
February.....	1,725	1,350	1,417	78,696	0.96	0.92
March.....	15,600	1,280	2,270	139,578	1.71	1.48
April.....	3,675	1,575	1,949	115,973	1.42	1.27
May.....	4,135	1,210	1,600	98,381	1.20	1.04
June.....	4,135	1,000	1,322	78,664	0.95	0.86
July.....	14,125	1,140	3,321	204,202	2.48	2.15
August.....	21,942	2,100	5,042	310,022	3.80	3.29
September.....	52,600	1,500	6,620	393,916	4.79	4.30
October.....	27,400	2,675	7,250	445,788	5.45	4.72
November.....	3,675	1,875	2,691	160,125	1.95	1.75
December.....	9,995	2,175	3,102	194,425	2.38	2.06
The year.....	52,600	1,000	3,229	2,349,080	28.67	2.10
1899.						
January.....	17,075	2,400	4,175	256,711	3.18	2.76
February.....	32,710	2,400	8,776	487,394	6.04	5.80
March.....	61,050	4,135	13,127	807,148	9.99	8.67
April.....	19,730	3,900	6,172	367,259	4.55	4.06
May.....	8,520	2,000	3,933	241,831	2.99	2.59
June.....	3,787	1,270	2,492	148,284	1.84	1.65
July.....	4,625	1,470	1,873	115,166	1.43	1.24
August.....	5,400	1,270	1,645	101,147	1.26	1.09
September.....	2,800	1,210	1,588	94,493	1.17	1.05
October.....	1,760	1,150	1,386	85,222	1.06	0.92
November.....	1,540	1,270	1,384	82,354	1.01	0.91
December.....	12,650	1,400	2,921	179,005	2.22	1.93
The year.....	61,050	1,150	4,123	2,966,614	36.74	2.72

ESTIMATED MONTHLY DISCHARGE OF CATAWBA RIVER AT CATAWBA, N. C.—Continued.  
[Drainage area, 1,514 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maximum.	Minimum.	Mean.	Second-feet per Square Mile.	Depth in Inches.
1901.					
January.....	17,240	2,720	3,777	2.49	2.87
February.....	4,175	2,720	3,009	1.99	2.07
March.....	38,375	2,855	5,130	3.39	3.91
April 1-20.....			9,911	6.55	4.87
May.....	81,500	3,150	8,260	5.46	6.29
June.....	24,540	2,810	5,358	3.54	3.95
July.....	6,655	2,275	3,383	2.23	2.57
August.....	40,250	2,450	10,326	6.82	7.87
September.....	6,590	2,495	3,493	2.31	2.58
October.....	4,120	2,315	2,601	1.72	1.98
November.....	3,500	2,000	2,311	1.53	1.71
December.....	45,875	2,090	5,830	3.85	4.44

NOTE.—No estimates made for 1900.

#### CATAWBA RIVER NEAR MORGANTON, N. C.

The original station was established June 19, 1900, in connection with the hydrographic investigation of the southern Appalachian area, at which time a wire gage was installed on the highway bridge on the road from Morganton to Hartland. In May, 1901, the river throughout this part of its course rose from 8 to 15 feet higher than ever before known, and the bridge and gage were destroyed. The present station was established May 15, 1903, at the bridge which was built to replace the one carried away by the flood of May, 1901. The station is 1 mile north of Morganton and about 200 yards below the mouth of Upper Creek.

The channel is straight for about 200 feet above and 600 feet below the station. The current is swift. The right bank is low and overflows to a slight extent on account of erosion, but all water passes beneath the approach to the bridge. The left bank is high, rocky, and wooded. The bed of the stream is rocky, with sand and gravel near the right bank.

Discharge measurements are made from the downstream side of the single-span steel highway bridge. The initial point for soundings is the left end of the downstream hand rail.

A standard chain gage is attached to the lower chord on the downstream side of the bridge; length of chain, 37.60 feet. The gage is read once each day by Oscar A. Gillam. Bench marks were established as follows: (1) The left side of the upper surface of the sixth floor beam at the downstream side of the bridge, marked by a spot of white paint and the letters "B. M."; elevation, 34.77 feet. (2) A copper plug set in cement in a rock on the left bank 24.3 feet back of the initial point for soundings, 3 feet downstream from the line of the downstream truss. It is about 1½ feet above the road and is enclosed in a circle of white paint and marked "B. M."; elevation, 37.37 feet. Elevations refer to the datum of the gage.

## DISCHARGE MEASUREMENTS OF CATAWBA RIVER NEAR MORGANTON, N. C., IN 1903-1907.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1903.						
Feb. 13	E. W. Myers.....	---	850	3.36	2.77	2,861
May 5	do.....	---	726	2.28	2.04	1,656
May 5	do.....	---	726	2.33	2.05	1,698
June 25	do.....	---	611	2.09	1.93	1,276
June 25	do.....	---	611	2.10	1.95	1,282
Aug. 21	B. S. Drane.....	---	552	2.14	1.77	1,181
Aug. 21	do.....	---	554	2.15	1.76	1,193
Oct. 28	do.....	---	458	1.15	1.16	528
Oct. 28	do.....	---	462	1.21	1.18	559
Dec. 11	do.....	---	439	1.09	1.19	490
Dec. 11	do.....	---	440	1.12	1.22	493
1904.						
Feb. 17	B. S. Drane.....	---	435	1.24	1.23	539
Mar. 18	do.....	---	622	1.31	1.56	816
Mar. 18	do.....	---	615	1.37	1.56	843
May 5	do.....	---	641	2.04	2.06	1,305
May 27	do.....	---	458	1.68	1.48	770
July 21	do.....	---	415	1.08	1.01	447
Aug. 19	do.....	---	427	1.49	1.28	637
Sept. 29	do.....	---	356	1.10	1.04	391
Sept. 29	do.....	---	356	1.11	1.01	395
Dec. 15	do.....	---	394	1.15	1.15	454
Dec. 16	do.....	---	405	1.23	1.18	500
1905.						
Apr. 19	B. S. Drane.....	170	482	1.72	1.51	827
June 27	do.....	139	419	1.76	1.35	738
Aug. 25	do.....	171	630	2.43	2.01	1,529
Nov. 9	W. E. Hall.....	165	460	1.06	1.09	496
1906.						
Mar. 2	Murphy and Hall.....	160	709	----	1.84	1,240
June 18	W. E. Hall.....	216	1,220	----	4.36	4,640
1907.						
Apr. 1	Warren E. Hall.....	170	550	2.23	1.93	1,228
May 21	do.....	170	476	1.71	1.50	816
Sept. 27	do.....	160	560	1.63	1.58	913



DAILY GAGE HEIGHT, IN FEET, OF CATAWBA RIVER NEAR MORGANTON, N. C., FOR 1903.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....		3.45	1.75	1.50	1.55	1.25	1.20	1.20
2.....		3.45	1.70	1.75	1.45	1.25	1.20	1.20
3.....		3.25	1.70	1.60	1.35	1.25	1.20	1.20
4.....		2.45	1.75	2.55	1.35	1.25	1.20	1.20
5.....		3.00	2.00	2.25	1.30	1.25	2.00	1.20
6.....	2.00	10.00	2.00	1.50	1.35	1.30	1.55	1.20
7.....	2.00	5.25	2.15	1.50	1.30	1.50	1.35	1.20
8.....	1.95	3.60	1.80	1.40	1.45	3.00	1.25	1.20
9.....	1.95	2.45	1.70	1.35	1.95	1.65	1.25	1.20
10.....	1.95	6.45	1.65	1.30	1.45	1.40	1.25	1.20
11.....	1.95	4.00	1.80	1.40	1.40	1.40	1.25	1.20
12.....	1.90	3.35	2.00	1.60	1.45	1.35	1.20	1.15
13.....	1.90	2.90	2.40	1.85	1.30	1.35	1.20	1.30
14.....	2.00	2.60	2.00	1.95	1.35	1.30	1.20	1.25
15.....	1.95	2.45	1.90	1.80	1.40	1.30	1.20	1.25
16.....	1.90	2.35	1.80	2.75	1.75	1.30	1.20	1.25
17.....	1.90	2.30	1.75	2.00	2.15	1.50	1.70	1.25
18.....	1.90	2.60	1.70	2.00	2.05	1.50	2.20	1.20
19.....	1.85	2.25	1.70	1.85	1.50	1.40	1.60	1.20
20.....	1.85	2.20	1.70	1.75	1.45	1.40	1.40	1.40
21.....	1.80	2.15	1.60	1.85	1.35	1.35	1.30	1.60
22.....	1.75	2.05	1.50	1.45	1.35	1.35	1.30	1.40
23.....	1.75	2.80	1.50	1.50	1.30	1.35	1.30	1.30
24.....	1.75	2.15	1.50	1.50	1.30	1.30	1.30	1.30
25.....	1.75	2.05	1.50	1.35	1.25	1.30	1.30	1.30
26.....	1.75	2.00	1.45	1.35	1.30	1.30	1.25	1.30
27.....	1.80	1.95	1.45	1.30	1.30	1.30	1.25	1.30
28.....	1.70		1.40	1.00	1.30	1.25	1.20	1.30
29.....	1.70	2.00	1.60	1.25	1.25	1.20	1.20	1.30
30.....	2.25	1.80	1.70	1.25	1.25	1.20	1.20	1.25
31.....	1.95		1.60	1.20		1.25		1.25

DAILY GAGE HEIGHT, IN FEET, OF CATAWBA RIVER NEAR MORGANTON, N. C., FOR 1904 AND 1905.

1904.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	1.25	1.30	1.80	1.55	1.35	4.45	1.95	3.10	1.70	0.95	1.00	1.10
2.....	1.25	1.30	1.65	1.50	1.35	3.25	1.70	2.35	2.20	.95	1.00	1.15
3.....	1.25	1.25	1.60	1.45	3.30	2.40	1.50	1.90	1.55	.95	1.10	1.25
4.....	1.20	1.25	1.55	1.40	2.60	2.10	1.35	1.70	1.90	.90	1.75	1.40
5.....	1.20	1.25	1.50	1.40	2.15	1.90	1.50	1.95	2.20	.95	1.50	1.70
6.....	1.20	1.25	1.50	1.40	1.80	1.75	1.35	2.30	1.50	.95	1.30	2.05
7.....	1.50	1.35	9.20	1.50	1.70	1.95	1.30	2.45	1.40	1.10	1.15	1.55
8.....	1.30	1.90	4.30	1.55	3.50	2.00	1.30	2.00	1.30	1.00	1.10	1.40
9.....	1.20	1.70	2.80	2.65	4.10	1.65	1.35	1.70	1.30	1.05	1.10	1.35
10.....	1.20	1.65	2.30	1.70	3.05	1.60	1.30	2.10	1.30	1.00	1.05	1.35
11.....	1.20	1.50	2.10	1.60	2.40	1.70	1.30	2.05	1.35	.95	1.00	1.35
12.....	1.20	1.40	1.90	1.60	2.10	1.55	1.35	2.40	1.30	.95	1.00	1.25
13.....	1.20	1.40	1.80	1.60	2.00	1.45	1.30	1.85	1.25	.95	1.80	1.25
14.....	1.20	1.35	1.80	1.55	1.95	1.45	1.25	1.65	1.20	.90	1.50	1.20
15.....	1.20	1.35	1.75	1.50	1.90	1.40	1.25	1.50	1.15	.95	1.35	1.15
16.....	1.20	1.35	1.65	1.45	1.70	1.45	1.20	1.50	1.10	.90	1.25	1.15
17.....	1.15	1.30	1.60	1.55	1.65	1.65	1.15	1.40	1.05	.85	1.20	1.20
18.....	1.15	1.30	1.60	1.45	2.30	1.60	1.10	1.35	1.05	.95	1.20	1.25
19.....	1.15	1.30	1.55	1.40	2.90	2.05	1.10	1.30	1.10	.90	1.10	1.20
20.....	1.15	1.30	1.50	1.35	1.80	1.80	1.05	1.40	1.10	.90	1.00	1.15
21.....	1.20	1.30	1.50	1.40	1.60	1.55	1.10	1.35	1.10	.90	1.05	1.15
22.....	1.25	2.80	1.60	1.40	1.60	1.45	1.10	1.40	1.05	.90	1.05	1.10
23.....	2.40	2.40	1.60	1.45	1.55	1.40	1.20	2.40	1.05	.90	1.05	1.05
24.....	1.65	1.85	1.90	1.35	1.60	1.35	1.15	2.40	1.05	.90	1.10	1.05
25.....	1.50	1.70	2.00	1.35	1.60	1.30	2.40	1.60	1.05	.95	1.00	1.25
26.....	1.40	1.60	1.90	1.60	1.70	1.30	1.70	1.50	1.05	1.00	1.05	1.30
27.....	1.40	1.80	1.85	1.60	1.45	1.40	1.30	2.00	1.05	.95	1.05	1.75
28.....	1.35	1.80	1.80	1.45	1.50	1.65	1.65	1.65	1.00	.95	1.05	2.05
29.....	1.35	1.80	1.70	1.40	1.55	1.85	1.50	1.40	1.00	1.00	1.10	1.55
30.....	1.35		1.60	1.35	1.65	2.50	1.40	1.30	.95	.95	1.10	1.50
31.....	1.30		1.55		5.25		1.35	1.40		1.00		1.45
1905.												
1.....	1.45	1.3	2.05		1.35	1.5	1.7	1.55	1.45	1.1		1.1
2.....	1.4	1.25	1.00		1.35	1.45	1.6	1.55	1.95	1.05		1.1
3.....	1.4	1.3	1.9		1.5	1.4	1.65	1.5	1.8	1.15		4.3
4.....	1.3	1.2	1.85		1.7	1.4	1.7	1.5	1.65	1.15		2.0
5.....	1.25	1.25	1.85		1.65	1.35	1.95	1.45	1.45	1.15		1.85
6.....	1.75	1.3	1.8		3.3	1.35	3.3	1.55	1.4	1.1		1.45
7.....	2.2	1.45	1.75		2.6	1.3	2.3	1.45	1.35	1.15	1.1	1.4
8.....	1.55	1.45	1.65		2.25	1.25	2.0	2.0	1.3	1.15	1.1	1.3
9.....	1.45	1.4	1.8	1.75	2.4	1.25	2.95	2.7	1.3	1.1	1.1	4.8
10.....	1.85	1.3	2.2	1.7	2.5	1.2	1.95	4.1	1.3	3.4	1.1	2.6
11.....	2.3	1.6	2.25	1.65	2.25	1.15	3.2	6.2	1.25	1.65	1.1	1.9
12.....	7.2	2.1	2.1	1.75	2.2	1.15	11.5	4.2	1.35	1.55	1.1	1.75
13.....	3.8	2.6	2.00	2.05	1.95	1.1	8.2	4.0	1.3	1.4	1.1	1.7
14.....	2.65	1.7	1.9	2.00	4.5	1.15	6.2	3.5	1.25	1.35	1.15	1.6
15.....	2.1	1.7	1.65	1.85	4.6	1.6	4.0	3.6	1.25	1.35	1.1	1.95
16.....	1.95	1.6	1.6	1.7	4.8	2.3	3.4	2.9	1.25	1.25	1.1	2.35
17.....	1.7	1.55	1.7	1.65	3.2	5.6	2.6	2.5	1.25	1.2	1.1	2.1
18.....	1.6	1.5	1.6	1.65	2.7	4.7	2.4	2.3	1.3	1.2	1.05	1.95
19.....	1.55	1.45	1.6	1.5	2.45	3.2	2.25	2.2	1.3	1.2	1.05	1.85
20.....	1.5	2.3	1.55	1.45	2.0	2.6	2.15	2.1	1.25	1.2	1.2	1.7
21.....	1.5	3.7	1.5	1.4	2.05	2.25	2.1	2.0	1.3	1.15	1.2	4.8
22.....	1.45	3.8	1.55	1.45	2.0	1.9	2.6	2.0	1.2	1.1	1.15	2.8
23.....	1.4	3.6	1.6	1.45	1.95	1.85	2.45	1.8	1.2	1.05	1.1	3.3
24.....	1.35	2.9	1.5	1.4	3.3	1.7	2.4	2.0	1.2	1.15	1.1	2.05
25.....	1.3	2.6		1.4	2.55	1.55	2.3	2.25	1.2	1.25	1.1	1.95
26.....	1.2	2.4		1.45	2.15	1.5	2.15	1.9	1.15	1.20	1.1	1.9
27.....	1.15	2.2		1.5	1.95	1.35	2.1	1.75	1.15		1.05	1.8
28.....	1.15	2.1		1.5	1.9	1.35	1.95	1.6	1.15		1.1	1.6
29.....	1.1			1.45	1.85	1.65	2.00	1.55	1.15		1.1	1.6
30.....	1.35			1.4	1.75	1.8	1.85	1.5	1.1		1.1	1.75
31.....	1.3				1.65		1.6	1.4				1.6

DAILY GAGE HEIGHT, IN FEET, OF CATAWBA RIVER NEAR MORGANTON, N. C., FOR 1906.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1.....	1.65	3.3	1.9	3.1	2.15	1.5	17.....	2.35	2.05	2.6	2.8	1.7	4.0
2.....	1.65	2.8	1.85	2.8	2.05	1.45	18.....	2.15	2.0	2.1	2.6	1.6	3.35
3.....	3.4	2.7	1.85	2.4	2.05	1.4	19.....	2.15	2.0	2.85	2.5	1.6	2.85
4.....	5.6	2.6	2.05	2.25	2.0	2.75	20.....	2.0	1.95	2.8	2.35	1.55	3.3
5.....	2.8	2.6	2.35	2.15	2.3	2.2	21.....	1.9	2.1	2.5	2.2	1.55	2.7
6.....	2.45	2.5	2.25	2.2	2.05	1.95	22.....	2.3	2.0	2.35	2.15	1.5	3.45
7.....	2.3	2.3	2.1	2.2	2.05	1.7	23.....	13.1	2.2	2.35	2.1	1.6	3.0
8.....	2.2	2.25	2.3	2.1	2.0	1.65	24.....	5.4	2.2	2.2	2.1	1.55	2.1
9.....	2.0	2.2	2.2	2.0	1.9	1.6	25.....	4.0	2.1	2.05	1.95	1.45	2.05
10.....	1.85	2.1	2.1	1.95	1.9	2.4	26.....	3.8	2.1	2.0	1.9	1.6	2.05
11.....	2.9	2.05	1.95	1.9	1.85	2.1	27.....	4.0	2.05	1.9	1.8	2.05	1.9
12.....	3.3	2.2	1.9	1.9	1.7	2.5	28.....	3.9	1.95	1.9	1.8	1.7	1.85
13.....	2.6	2.2	1.8	1.8	1.9	3.15	29.....	3.8	-----	1.8	1.85	1.65	1.85
14.....	2.05	2.15	1.95	2.6	1.95	6.4	30.....	3.65	-----	4.3	1.9	1.65	1.8
15.....	3.15	2.15	4.2	2.0	1.8	9.8	31.....	3.5	-----	3.3	-----	1.55	-----
16.....	2.8	2.15	3.15	2.9	1.75	5.2							

NOTE.—Gage reading not taken during last six months.

DAILY GAGE HEIGHT, IN FEET, OF CATAWBA RIVER AT MORGANTON, N. C., FOR 1907.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	-----	1.90	1.90	2.00	1.95	9.10	1.80	1.35	1.10	1.45	1.15	1.45
2.....	-----	1.90	3.00	1.70	1.85	5.40	1.70	1.30	1.10	1.40	1.40	1.40
3.....	-----	1.85	2.30	1.60	2.05	3.35	1.65	1.25	1.10	1.35	1.40	1.40
4.....	-----	1.80	2.00	1.60	2.15	2.75	1.60	1.20	1.15	1.35	1.25	1.45
5.....	-----	2.00	1.95	1.55	2.10	2.50	1.55	1.20	1.15	1.35	1.20	1.45
6.....	-----	1.90	1.90	1.60	1.90	2.35	1.60	1.25	1.15	1.35	1.20	1.40
7.....	-----	1.80	1.90	1.60	1.85	2.20	1.50	1.20	1.15	1.30	1.15	1.40
8.....	-----	1.80	1.95	1.55	1.80	2.25	1.45	1.20	1.15	1.30	1.15	1.35
9.....	-----	1.75	1.90	1.65	1.95	2.20	1.40	1.25	1.10	1.30	1.15	3.15
10.....	-----	1.75	2.95	1.00	1.80	2.20	1.35	1.30	1.10	1.25	1.35	2.10
11.....	-----	1.70	2.35	1.65	1.85	2.15	1.65	1.25	1.10	1.25	1.25	1.90
12.....	-----	1.70	2.10	1.65	1.80	2.15	1.70	1.25	2.40	1.25	1.25	1.85
13.....	-----	1.70	2.00	1.65	1.70	2.10	5.50	1.30	2.10	1.20	1.20	1.75
14.....	-----	1.70	2.30	1.65	1.70	2.20	3.50	1.25	1.75	1.20	1.20	6.00
15.....	-----	1.70	2.10	1.65	1.70	2.10	2.00	1.25	1.50	1.20	1.20	3.60
16.....	2.00	1.65	1.90	1.60	1.65	1.90	1.90	1.20	1.25	1.20	1.15	2.90
17.....	1.95	1.70	1.85	1.60	1.60	1.80	1.70	1.30	1.10	1.15	1.35	2.60
18.....	1.95	1.65	1.80	1.60	1.55	1.60	1.75	1.90	1.10	1.15	1.30	2.00
19.....	1.90	1.65	1.80	2.00	1.50	1.60	1.65	1.65	1.05	1.15	1.30	1.90
20.....	1.85	1.70	1.80	1.75	1.50	1.70	1.50	1.30	1.05	1.15	1.30	1.80
21.....	1.80	1.65	1.75	1.65	1.50	1.65	1.45	1.25	1.05	1.15	2.05	1.75
22.....	1.80	1.60	1.80	1.70	1.45	1.60	1.40	1.80	1.05	1.15	1.90	-----
23.....	1.80	1.60	1.70	3.00	1.45	1.65	1.35	1.50	9.90	1.15	3.00	-----
24.....	1.75	1.85	1.65	2.35	1.45	2.30	1.55	1.50	2.95	1.15	4.20	-----
25.....	1.70	1.80	1.65	2.05	1.70	2.00	1.50	1.40	2.05	1.15	2.10	-----
26.....	1.80	1.90	1.65	1.90	1.70	1.80	1.40	1.30	1.75	1.15	1.90	-----
27.....	1.80	1.90	1.60	2.15	1.70	1.70	1.35	1.20	1.60	1.35	1.70	-----
28.....	1.75	2.05	1.60	2.40	1.60	2.15	1.35	1.20	1.65	1.25	1.60	-----
29.....	1.70	-----	1.60	2.20	1.45	2.35	1.35	1.20	1.60	1.20	1.50	-----
30.....	1.75	-----	1.60	2.05	1.45	1.90	1.40	1.15	1.60	1.15	1.50	-----
31.....	1.75	-----	-----	-----	1.75	-----	1.40	1.10	-----	1.15	-----	-----

DAILY GAGE HEIGHT, IN FEET, OF CATAWBA RIVER AT LOWER WAGON BRIDGE NEAR MORGANTON, N. C., FOR 1908.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1.....	2.6	1.6	2.55	2.0	2.0	2.0	2.0	1.8	3.9	1.55
2.....	2.3	1.65	2.4	2.0	1.85	1.95	2.55	1.9	3.9	1.55
3.....	2.1	1.7	2.3	1.95	1.75	2.0	3.0	1.95	3.85	1.6
4.....	2.0	1.75	2.4	1.95	1.65	2.05	3.5	1.9	3.8	1.45
5.....	2.5	1.8	2.3	1.95	3.55	2.05	4.0	1.9	3.8	1.45
6.....	2.1	1.8	2.3	1.95	2.85	2.0	3.65	1.9	3.6	1.45
7.....	2.6	1.8	2.3	1.8	2.5	2.0	2.85	2.0	3.65	1.4
8.....	2.3	1.85	2.25	1.8	2.3	2.05	2.55	2.05	3.4	1.4
9.....	2.05	1.85	2.1	1.75	2.15	2.0	2.55	2.9	3.35	2.5
10.....	1.9	1.9	2.1	1.7	2.05	2.0	2.4	2.95	3.3	2.4
11.....	2.7	2.0	2.15	1.65	1.95	1.95	2.2	2.95	3.25	2.25
12.....	8.7	2.5	2.4	1.65	1.9	1.95	1.9	2.9	3.25	2.15
13.....	7.8	2.5	2.25	1.6	1.85	1.9	1.9	2.9	3.15	2.0
14.....	4.4	6.0	2.15	2.4	1.8	1.9	1.9	2.25	3.1	2.0
15.....	2.9	12.0	2.0	2.35	1.8	1.8	1.85	2.1	3.0	2.95
16.....	2.5	4.6	2.0	2.3	1.75	1.8	1.85	2.0	2.9	2.9
17.....	2.35	3.6	1.95	2.2	1.75	1.75	1.8	2.0	2.85	2.85
18.....	2.35	3.3	1.95	2.1	1.75	1.7	1.8	2.95	2.7	2.75
19.....	2.35	3.0	1.9	2.0	2.5	1.8	1.8	2.9	2.75	2.7
20.....	2.05	2.8	2.2	1.9	2.35	1.9	1.95	2.5	2.6	2.6
21.....	2.0	2.6	2.5	1.8	2.25	1.95	1.95	3.3	2.5	2.4
22.....	1.95	2.4	2.95	1.75	2.25	2.0	1.9	3.0	2.4	2.35
23.....	1.8	2.3	3.0	1.75	2.55	1.85	1.8	4.0	2.2	11.5
24.....	1.75	2.35	3.9	1.6	2.35	1.7	1.8	4.6	2.15	9.0
25.....	1.6	2.35	3.6	3.5	2.0	1.7	1.7	11.2	2.1	8.4
26.....	1.7	2.45	3.4	2.75	1.85	1.65	1.8	14.8	1.85	8.5
27.....	1.8	2.45	2.25	2.5	1.85	1.65	1.9	5.7	1.75	8.2
28.....	1.8	2.5	3.0	2.25	1.9	6.55	1.8	4.8	1.65	7.8
29.....	1.7	2.5	2.75	2.0	1.85	1.65	1.8	4.2	1.6	7.5
30.....	1.6	-----	2.4	2.5	2.0	1.50	1.8	4.0	1.5	7.4
31.....	1.55	-----	3.0	-----	2.0	-----	1.9	3.95	1.5	7.0

RATING TABLE FOR CATAWBA RIVER NEAR MORGANTON, N. C., FROM May 6, 1903, TO DECEMBER 31, 1904.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
.90	307	2.3	2,025	3.7	4,755	5.1	7,485
1.00	372	2.4	2,220	3.8	4,950	5.2	7,680
1.1	444	2.5	2,415	3.9	5,145	5.3	7,875
1.2	526	2.6	2,610	4.0	5,340	5.4	8,070
1.3	612	2.7	2,805	4.1	5,535	5.5	8,265
1.4	702	2.8	3,000	4.2	5,730	5.6	8,460
1.5	800	2.9	3,195	4.3	5,925	5.7	8,655
1.6	908	3.0	3,390	4.4	6,120	5.8	8,850
1.7	1,026	3.1	3,585	4.5	6,315	5.9	9,045
1.8	1,156	3.2	3,780	4.6	6,510	6.0	9,240
1.9	1,300	3.3	3,975	4.7	6,705	6.5	10,215
2.0	1,460	3.4	4,170	4.8	6,900	7.0	11,190
2.1	1,640	3.5	4,365	4.9	7,095		
2.2	1,830	3.6	4,560	5.0	7,290		

Above 7 feet gage height differences are 195 per tenth.

RATING TABLE FOR CATAWBA RIVER NEAR MORGANTON, N. C., FOR 1905.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.00	400	1.40	740	1.80	1,200	2.20	1,835
1.10	470	1.50	840	1.90	1,340	2.30	2,025
1.20	550	1.60	950	2.00	1,490		
1.30	640	1.70	1,070	2.10	1,655		

The above table is based on discharge measurements made during 1903-1905. It is well defined between gage heights 1 foot and 2.7 feet. The table has been extended beyond these limits. Above gage height 2.3 feet the rating curve is a tangent, the difference being 195 per tenth. Above gage height 2.2 feet the table is the same as for 1904.

RATING TABLE FOR CATAWBA RIVER NEAR MORGANTON, N. C., FOR 1906 AND 1907.

1.10	470	2.30	1,780	3.50	3,360	5.40	6,490
1.20	550	2.40	1,900	3.60	3,500	5.60	6,880
1.30	640	2.50	2,030	3.70	3,650	5.80	7,280
1.40	740	2.60	2,160	3.80	3,800	6.00	7,700
1.50	840	2.70	2,290	3.90	3,950	7.00	9,800
1.60	950	2.80	2,420	4.00	4,100	8.00	12,000
1.70	1,060	2.90	2,550	4.20	4,400	9.00	14,300
1.80	1,180	3.00	2,680	4.40	4,710	10.00	16,600
1.90	1,300	3.10	2,810	4.60	5,040	11.00	19,000
2.00	1,420	3.20	2,940	4.80	5,390	12.00	21,400
2.10	1,540	3.30	3,080	5.00	5,750	13.00	23,900
2.20	1,660	3.40	3,220	5.20	6,110	14.00	26,400

NOTE.—The above table is based on discharge measurements made during 1903-1906 and is well defined below gage height 2 feet.

## ESTIMATED MONTHLY DISCHARGE OF CATAWBA RIVER NEAR MORGANTON, N. C.

[Drainage area, 758 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maximum.	Minimum.	Mean.	Second-feet per Square Mile.	Depth in Inches.
1903.					
May 6-31.....	1,925	1,026	1,283	1.69	1.63
June.....	17,040	1,156	3,476	4.59	5.12
July.....	2,220	702	1,100	1.45	1.67
August.....	2,902	372	1,028	1.36	1.57
September.....	1,735	569	770	1.02	1.14
October.....	3,390	526	735	.97	1.12
November.....	1,830	526	674	.89	.99
December.....	908	485	579	.76	.88
1904.					
January.....	2,220	487	643	0.848	0.978
February.....	3,000	569	915	1.21	1.30
March.....	15,480	800	1,759	2.32	2.68
April.....	2,708	657	846	1.12	1.25
May.....	7,777	657	1,878	2.48	2.86
June.....	6,217	612	1,333	1.76	1.96
July.....	2,220	410	711	.938	1.08
August.....	3,585	612	1,293	1.71	1.97
September.....	1,830	339	639	.843	.940
October.....	447	280	338	.446	.514
November.....	1,156	372	515	.679	.758
December.....	1,550	410	679	.896	1.03
The year.....	15,480	280	962	1.27	17.32

ESTIMATED MONTHLY DISCHARGE OF CATAWBA RIVER NEAR MORGANTON, N. C.—*Continued.*  
[Drainage area, 758 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maxi- mum.	Mini- mum.	Mean.	Second- feet per Square Mile.	Depth in Inches.
1905.					
January.....	11,580	470	1,438	1.90	2.19
February.....	4,950	550	1,616	2.13	2.22
March 1-24.....	1,930	840	1,212	1.60	1.43
April 9-30.....	1,572	740	964	1.27	1.04
May.....	6,900	690	2,311	3.05	3.52
June.....	8,460	470	1,474	1.94	2.16
July.....	19,960	950	3,290	4.34	5.00
August.....	9,630	740	2,259	2.98	3.44
September.....	1,415	470	670	.884	.968
October 1-26.....	4,170	435	710	.937	.906
November 7-30.....	550	435	476	.628	.561
December.....	6,900	470	1,875	2.47	2.85
1906.*					
January.....	24,200	1,000	3,360	4.43	5.11
February.....	3,080	1,360	1,730	2.28	2.37
March.....	4,550	1,180	1,870	2.47	2.85
April.....	2,810	1,180	1,680	2.22	2.48
May.....	1,780	790	1,180	1.56	1.80
June.....	16,100	740	2,680	3.54	3.95
1907.					
January 16-31.....	1,420	1,060	1,200	1.58	0.94
February.....	1,480	950	1,150	1.52	1.58
March.....	2,680	950	1,350	1.78	2.05
April.....	2,680	895	1,210	1.60	1.78
May.....	1,600	790	1,090	1.44	1.66
June.....	14,500	950	2,120	2.80	3.12
July.....	6,680	690	1,170	1.54	1.78
August.....	1,300	470	664	.876	1.01
September.....	16,400	435	1,320	1.74	1.94
October.....	790	510	585	.772	0.89
November.....	4,400	510	942	1.24	1.38
December 1-21.....	7,700	690	1,670	2.20	1.72

\*Values are rated as follows: January to April and June, good; May, excellent.

CATAWBA RIVER NEAR OLD FORT, N. C.

This station was established on May 24, 1907. It is located at a wooden wagon bridge  $\frac{1}{2}$  mile south of Old Fort, and  $\frac{1}{4}$  of a mile above the mouth of Mill Creek.

The gage is a vertical rod in two sections, fastened to a special post in edge of the water, and to the left bank bridge bent.

Discharge measurements are made from the single-span wooden bridge and its short trestle approaches.

Both banks are liable to overflow and the bed is sand and liable to shift.

The bench mark is a large nail driven in the upstream end of the first floor beam from the left end of the bridge; elevation, 10.00 feet. The station was discontinued at the end of 1907.

## ESTIMATED DISCHARGE MEASUREMENTS OF CATAWBA RIVER NEAR OLD FORT, N. C., FOR 1907.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
May 24	Warren E. Hall .....	25	34	0.59	1.00	20
May 25	do. ....	25	35	0.63	1.03	22
July 10	do. ....	26	30	0.50	0.93	15
July 10	do. ....	26	30	0.50	0.93	15
Sept. 25	do. ....	27	35	0.40	1.00	14

## DAILY GAGE HEIGHT, IN FEET, OF CATAWBA RIVER AT OLD FORT, N. C., FOR 1907.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		2.40	1.10	1.10	0.90	1.00	1.00	1.00
2		2.10	1.00	1.10	.90	1.00	1.00	1.20
3		2.00	1.00	1.10	.90	1.00	1.00	1.00
4		2.40	1.00	1.10	.90	1.00	1.00	1.00
5		2.20	1.00	1.10	.90	1.00	1.00	1.00
6		2.10	1.00	1.10	.90	1.00	1.00	1.00
7		2.20	1.00	1.20	1.50	1.00	1.00	.90
8		2.10	1.00	1.10	1.40	1.00	1.00	.90
9		1.80	1.00	1.10	1.40	1.00	1.00	.90
10		1.60	1.00	1.10	1.30	1.00	1.00	.90
11		1.60	1.00	1.00	1.30	1.00	1.00	.90
12		1.40	1.10	1.00	1.20	1.00	1.00	.80
13		1.40	1.10	1.00	1.00	1.00	1.00	.80
14		1.60	1.00	1.00	1.00	1.00	1.00	1.20
15		1.40	1.10	1.10	1.00	1.00	1.00	1.60
16		1.30	1.40	1.10	1.00	1.00	1.00	1.50
17		1.20	1.20	1.20	1.00	1.00	1.00	1.40
18		1.10	1.20	1.20	1.00	1.00	1.00	1.20
19		1.10	1.10	1.10	1.00	1.00	1.00	1.10
20		1.10	1.10	1.10	1.00	1.00	1.00	1.10
21		1.10	1.10	1.00	1.00	.90	1.20	1.10
22		1.10	1.00	1.00	1.00	.90	1.10	1.10
23		1.10	1.00	1.00	2.20	.90	1.00	1.10
24	1.00	1.20	1.00	1.00	1.60	.90	1.50	1.00
25	1.10	1.10	1.20	.90	1.00	.90	1.40	1.00
26	1.10	1.10	1.10	.90	1.00	1.30	1.30	1.00
27	1.20	1.10	1.10	.90	1.00	1.30	1.20	1.00
28	1.30	1.10	1.00	.90	1.40	1.20	1.10	2.20
29	1.30	1.10	1.00	.90	1.20	1.20	1.00	2.00
30	1.20	1.10	1.10	.90	1.00	1.20	1.00	1.80
31	1.20		1.10	.90		1.10		1.60

## RATING TABLE FOR CATAWBA RIVER AT OLD FORT, N. C., FOR 1907.

Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).
0.80	8	0.95	16	1.10	27	1.25	41
0.85	10	1.00	19	1.15	31	1.30	46
0.90	13	1.05	23	1.20	36		

## JOHN RIVER NEAR MORGANTON, N. C.

This station was established in connection with the hydrographic investigation of the southern Appalachian area. It was located on the highway bridge on the road from Morganton to Lenoir.

A wire gage was established, the gage rod being nailed to the guard rail on the downstream side of the bridge.

The section presented at this station is fairly good at all times, though for a part of the way the bottom is rough and rocky. The river banks are high and are never overflowed, the bed is permanent, and the course of the stream is straight for some distance above and below the station.

This station was abandoned on December 31, 1901, but since that time a number of discharge measurements have been made, mostly at low seasons, for the purpose of comparing the flow of the river with that of Catawba River at the Morganton station, where continuous records are kept.

The old gage had been removed, and the gage heights for all of the newer measurements were determined by measuring down from a bench mark on the bridge, the datum for which is different from that formerly used.

The bench mark is the upper edge of the end of a bar extending from the floor beam to a brace at the downstream end of the second floor beam from the left pier, 32 feet from the initial point for soundings. Its elevation is 30.00 feet above datum.

DISCHARGE MEASUREMENTS OF JOHN RIVER NEAR MORGANTON, N. C.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage (Height Feet).	Discharge (Second- feet).
1903.						
June 13	E. W. Myers				2.64	465
June 19	do.				3.50	1,202
July 6	do.				2.63	511
Aug. 8	do.				1.90	135
Sept. 24	do.				1.90	148
Nov. 7	do.				2.32	367
1904.						
May 27	B. S. Drane	64	172	1.72	1.66	295
July 21	do.	61	163	1.26	1.44	205
Aug. 19	do.	62	170	1.40	1.53	238
Sept. 29	do.	61	135	1.13	1.31	153
Dec. 16	do.	61	146	1.00	1.27	146
1906.						
Mar. 2	Warren E. Hall	63	182	1.99	1.80	362
June 18	do.	70	310	4.93	3.67	1,530



DAILY GAGE HEIGHT, IN FEET, OF JOHN RIVER NEAR MORGANTON, N. C., FOR 1900 AND 1901.

1900.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.								2.10		1.80	2.30	2.32
2.							2.60	2.03		1.83	2.30	
3.							2.55	2.00		1.93	2.50	2.32
4.							2.58	2.15		2.43		3.38
5.							2.70	1.90		2.38	2.60	3.20
6.							2.58	1.88		2.28	2.35	2.85
7.							2.45	1.93		2.10	2.35	2.67
8.								1.90		2.03	2.30	2.62
9.							2.38	1.90		1.93	2.25	2.00
10.							2.30	1.90	1.70	1.90	2.25	2.50
11.							2.25	1.90		1.90		2.35
12.							2.25		1.70	1.95	2.20	2.32
13.							2.30	1.98	1.70	1.90	2.20	2.35
14.							2.25	1.88	1.80		2.15	2.30
15.								1.93	2.90	1.90	2.15	2.28
16.							2.15	1.93		1.88	2.10	
17.							2.13	1.93	2.30	1.83	2.05	2.25
18.							2.10	1.93	2.03	1.78		2.20
19.						3.50	2.10		1.95	1.73	2.12	2.18
20.						3.25	2.15		1.90	1.73	2.15	2.22
21.						2.80	2.45		1.90		2.12	3.08
22.						3.28			1.90	1.88	2.10	2.92
23.						3.20	2.10			14.72	2.08	
24.							2.28		1.90	5.60	2.08	2.78
25.						3.75	2.35		1.85	3.45		2.68
26.						3.58	2.30		1.83	2.98	4.55	2.48
27.						3.23	2.23		1.83	2.70	3.00	2.32
28.						3.20	2.20		1.80		2.65	2.32
29.						2.95			1.83	2.45	2.52	2.28
30.						2.85	2.20			2.30	2.42	
31.							2.13			2.30		2.90
1901.												
1.	2.62	2.23	2.20	3.05	2.95	3.63	3.45	2.60	5.15	3.08	2.52	2.35
2.	2.52	2.28	2.15	8.85	2.90		3.30	2.50	4.05	3.00	2.53	2.40
3.	2.42			8.20	2.90	3.42	3.15	2.40	3.90	2.90	2.53	2.43
4.	2.32	2.65	2.15	4.15	2.80	3.33	3.10		3.80	2.80	2.53	2.43
5.	2.30	2.33	2.13	3.90		3.25	3.00	2.60	3.60	2.75	2.53	2.33
6.	2.32	2.33	2.13	3.25	2.80	3.50	3.00	17.02	3.50	2.70	2.53	2.33
7.	2.32	2.33	2.13		2.73	3.70		6.00	3.40	2.70	2.53	2.33
8.	2.32	2.28	2.13	3.18	3.85	3.45	3.00	3.85	3.20	2.73	2.53	2.35
9.	2.32	2.53	2.08	2.95	3.05		3.00	3.38	3.20	2.72	2.53	2.40
10.	2.37			2.70	3.08	3.13	2.93	3.05	3.20	2.70	2.53	3.50
11.	2.80	2.43	3.25	2.68	3.05	3.08	2.90		3.17	2.70	2.53	3.10
12.	5.65	2.43	2.45	2.60		3.00	2.95	3.27	3.17	2.68	2.50	2.90
13.		2.38	2.33	2.70	2.78	2.90	3.00	4.35	3.10	2.70	2.53	2.80
14.	3.02	2.33	2.30		2.70	8.95		6.10	3.08	2.95	2.50	3.10
15.	2.88	2.35	2.28	2.85	2.70	4.60	2.95	10.30		2.80	2.50	19.00
16.	2.68	2.35	2.25	2.68	2.63		3.25	5.75	3.60	2.78	2.45	6.58
17.	2.58			2.60	2.57	5.55	3.05	5.00	3.15	2.72	2.47	4.70
18.	2.50	2.30	2.23	2.70	2.50	4.35	2.90		3.10	2.68	2.48	3.75
19.	2.48	2.33	2.20	5.20		3.92	3.15	5.15	3.00	2.65	2.47	3.05
20.		2.28	2.20	17.70	3.18	4.45	3.05	4.48	3.00	2.60	2.48	2.95
21.	2.43	2.28	2.72	6.60	10.25	4.27		4.50	2.95	2.60	2.42	2.87
22.	2.43	2.28	2.32	4.60	20.50	7.90	2.77	7.15		2.60	2.43	
23.	2.40	2.23	2.25	4.15	6.15		2.70	6.11	2.90	2.60	2.47	2.90
24.	2.33			3.70	4.80	4.70	2.70	4.40		2.87	2.55	2.90
25.	2.33	2.20	2.90	3.53	4.40	4.15	2.63		2.88	2.55	2.50	3.00
26.	2.30	2.23	13.60	3.38		3.80	2.60	4.55	2.80	2.50	2.43	3.42
27.		2.23	6.15	3.27	6.55	3.65	2.57	4.60	2.70	2.50	2.42	2.90
28.	2.28	2.23	4.05		5.00	3.60		4.48	3.60	2.53	2.35	2.85
29.	2.28		3.35	3.08	4.20	3.50	2.60	4.43	3.10	2.50	2.38	15.00
30.	2.33		3.75	3.00	3.90			8.60	6.15	3.15	2.55	9.00
31.	2.33						2.73	5.90		2.50		6.45

RATING TABLE FOR JOHN RIVER NEAR MORGANTON, N. C., FOR 1900 AND 1901.

Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).
1.7	80	3.6	1,075	5.5	2,215	7.4	3,355
1.8	110	3.7	1,135	5.6	2,275	7.5	3,415
1.9	140	3.8	1,195	5.7	2,335	7.6	3,475
2.0	185	3.9	1,255	5.8	2,395	7.7	3,535
2.1	233	4.0	1,315	5.9	2,455	7.8	3,595
2.2	281	4.1	1,375	6.0	2,515	7.9	3,655
2.3	329	4.2	1,435	6.1	2,575	8.0	3,715
2.4	377	4.3	1,495	6.2	2,635	8.1	3,775
2.5	425	4.4	1,555	6.3	2,695	8.2	3,835
2.6	475	4.5	1,615	6.4	2,755	8.3	3,895
2.7	535	4.6	1,675	6.5	2,815	8.4	3,955
2.8	595	4.7	1,735	6.6	2,875	8.5	4,015
2.9	655	4.8	1,795	6.7	2,935	8.6	4,075
3.0	715	4.9	1,855	6.8	2,995	8.7	4,135
3.1	775	5.0	1,915	6.9	3,055	8.8	4,195
3.2	835	5.1	1,975	7.0	3,115	8.9	4,255
3.3	895	5.2	2,035	7.1	3,175	9.0	4,315
3.4	955	5.3	2,095	7.2	3,235		
3.5	1,015	5.4	2,155	7.3	3,295		

ESTIMATED MONTHLY DISCHARGE OF JOHN RIVER NEAR MORGANTON, N. C.

[Drainage area, 213 square miles.]

Month.	Discharge in Second-feet.			Run-off.		Rainfall.
	Maxi- mum.	Mini- mum.	Mean.	Second- feet per Square Mile.	Depth in Inches.	Inches.
1900.						
June*	.....	.....	869	4.08	1.82	8.26
July.....	535	233	330	1.55	1.79	4.95
August†.....	.....	.....	169	.79	.53	1.22
September‡.....	.....	.....	177	.83	.65	2.49
October.....	7,735	95	567	2.71	3.13	9.83
November.....	1,645	209	391	1.84	2.05	.....
December.....	955	281	455	2.14	2.47	4.74
1901.						
January.....	2,305	329	502	2.36	2.72	3.09
February.....	505	281	352	1.65	1.72	2.26
March.....	6,075	233	709	3.33	3.71	6.77
April.....	9,535	475	1,447	6.79	7.59	9.21
May.....	11,215	425	1,485	6.97	8.04	9.28
June.....	4,285	655	1,426	6.69	7.47	9.13
July.....	4,075	450	783	3.68	4.24	1.80
August.....	9,115	377	1,923	9.03	10.40	19.44
September.....	2,005	535	853	4.00	4.46	4.35
October.....	775	425	531	2.49	2.87	.97
November.....	450	329	419	1.97	2.19	.87
December.....	10,315	353	1,458	6.48	7.48	8.42
The year.....	11,215	233	991	4.62	62.89	75.59

\*12 days. †18 days. ‡21 days.

## JOHN RIVER AT COLLETTSVILLE, N. C.

This station was located at a foot log in the town.

The vertical gage was attached to the foot log supports, and to a tree.

This station was established on May 23, 1907, and was abandoned on July 31 of the same year.

## DISCHARGE MEASUREMENTS OF JOHN RIVER AT COLLETTSVILLE, N. C., IN 1907.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
May 23	Warren E. Hall .....	51	54	1.81	1.00	98
July 9	do. ....	58	64	1.78	1.15	114

## DAILY GAGE HEIGHT, IN FEET, OF JOHN RIVER AT COLLETTSVILLE, N. C., FOR 1907.

Day.	May.	June.	July.	Day.	May.	June.	July.	Day.	May.	June.	July.
1.....		7.50	1.30	12.....		1.40	1.30	23.....	1.00	1.40	1.20
2.....		3.60	1.40	13.....		1.50	1.40	24.....	1.00	1.50	1.40
3.....		2.20	1.40	14.....		1.50	1.50	25.....	1.00	1.40	1.30
4.....		1.80	1.50	15.....		1.40	1.50	26.....	1.10	1.30	1.20
5.....		1.60	1.40	16.....		1.40	1.60	27.....	1.20	1.40	1.20
6.....		1.40	1.40	17.....		1.40	1.50	28.....	1.00	1.50	1.20
7.....		1.30	1.30	18.....		1.30	1.30	29.....	1.00	1.70	1.30
8.....		1.20	1.30	19.....		1.30	1.50	30.....	1.00	1.40	1.40
9.....		2.00	1.20	20.....		1.30	1.30	31.....	1.10		1.20
10.....		1.80	1.20	21.....		1.40	1.30				
11.....		1.60	1.20	22.....		1.30	1.20				

## LINVILLE RIVER NEAR BRIDGEWATER, N. C.

This station, one of the temporary stations established in connection with the hydrographic investigations of the southern Appalachian region, was established on July 3, 1900, and was located at Poole's mill, just above the ford on the road from Morganton to Marion, the gage being near the tailrace of the mill. The gagings were made about 200 feet below the site of the gage.

The bed of the river is extremely rough and rocky throughout its entire course, and a section perfectly suitable for making discharge measurements could not be discovered. There are no bridges, so that it was necessary to make the gagings by wading, and as the rise is considerable and the current velocity very great at high water no measurements of flood discharge were possible.

The bench mark to which the gage was referred is a cross cut in the rock cliff on the left bank of the stream, at the point of gaging; and the initial point of sounding was the end of a log which is sunk in the sand of the right bank. The drainage area above this station is rough, mountainous, and largely forest covered.

## DISCHARGE MEASUREMENTS OF LINVILLE RIVER NEAR BRIDGEWATER, N. C.

Date.	Gage Height (Feet).	Discharge (Second-feet).	Date.	Gage Height (Feet).	Discharge (Second-feet).
1900.			1900.		
June 14.....	2.08	104	August 17.....	1.85	78
July 3.....	2.46	216	September 21.....	2.20	55
July 10.....	2.10	116			

## DAILY GAGE HEIGHT, IN FEET, OF LINVILLE RIVER NEAR BRIDGEWATER, N. C.

Day.	July.	Aug.	Sept.	Oct.	Day.	July.	Aug.	Sept.	Oct.
1900.					1900.				
1.....		2.17	1.83	2.25	17.....	2.17	1.87	2.33	
2.....		2.08	1.83	2.33	18.....	2.17	1.87	2.33	
3.....	2.46	2.12	1.79	2.42	19.....	1.96	1.92	2.00	
4.....	2.64	2.17	1.79	2.50	20.....	2.00	1.92	2.00	
5.....	2.42	2.08	1.75	2.42	21.....	2.25	1.87	2.08	
6.....	2.46	1.92	1.75	2.42	22.....	2.08	1.83	2.08	
7.....	2.37	2.00	1.75	2.37	23.....	2.08	1.83	2.08	
8.....	2.42	1.92	1.71	2.37	24.....	2.08	1.83	2.08	
9.....	2.29	1.92	1.71	2.37	25.....	2.17	1.79	2.00	
10.....	2.42	1.92	1.71	2.37	26.....	2.08	1.83	1.92	
11.....	2.37	1.92	1.71	2.42	27.....	2.25	1.79	1.92	
12.....	2.33	1.92	1.67	2.50	28.....	2.25	1.79	1.87	
13.....	2.37	1.92	1.67	2.56	29.....	2.08	1.79	2.25	
14.....	2.33	1.87	1.71	2.56	30.....	2.17	1.79	2.25	
15.....	2.29	1.92	1.79		31.....	2.08	1.79		
16.....	2.33	1.92	4.50						

## RATING TABLE FOR LINVILLE RIVER NEAR BRIDGEWATER, N. C., FOR 1900.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.6	55	2.4	194	3.2	515	4.0	835
1.7	63	2.5	235	3.3	555	4.1	875
1.8	73	2.6	275	3.4	595	4.2	915
1.9	84	2.7	315	3.5	635	4.3	955
2.0	97	2.8	355	3.6	675	4.4	995
2.1	112	2.9	395	3.7	715	4.5	1,035
2.2	132	3.0	435	3.8	755		
2.3	160	3.1	475	3.9	795		

## ESTIMATED MONTHLY DISCHARGE OF LINVILLE RIVER NEAR BRIDGEWATER, N. C.

[Drainage area, 86 square miles.]

Month.	Discharge in Second-feet.			Run-off.		Rainfall. Inches.
	Maximum.	Minimum.	Mean.	Second-feet per Square Mile.	Depth in Inches.	
1900.						
July.....	295	90	154	1.79	2.06	3.75
August.....	122	73	83	.96	1.11	3.20
September.....	1,035	59	122	1.41	1.57	2.79
October*.....	-----	--	191	2.22	1.16	11.54

\*Fourteen days' record.

## LINVILLE RIVER NEAR FONTA FLORA, N. C.

The station at this place was established on May 20, 1907, and is located at the footbridge  $\frac{1}{2}$  mile east of Fonta Flora, and about 6 miles above the mouth of the river, which is a tributary of Catawba River.

The gage is a vertical rod in two sections, the lower of which is attached to a special post in the edge of the water, and the upper section is attached to a tree on the bank. The gage is located on the left side of the river, and about 1,200 feet above the footbridge.

Discharge measurements are made from the footbridge, and cannot be made at times of high water on account of overflowing of the banks.

The bench mark is a large nail driven in the birch tree to which the upper section of the gage is attached; elevation, 6.00 feet.

## DISCHARGE MEASUREMENTS OF LINVILLE RIVER NEAR FONTA FLORA, N. C., IN 1907.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1907.						
May 21	Warren E. Hall	50	41	2.22	1.00	*91
May 21	do	50	41	2.22	1.00	*91
July 8	do	94	176	0.61	1.05	†107
Sept. 26	do	89	90	1.78	1.20	‡160
Sept. 27	do	84	81	1.68	1.13	‡136

\*Measurement at old bridge.

†Wading measurement.

‡Measurement at new bridge.

## DAILY GAGE HEIGHT, IN FEET, OF LINVILLE RIVER NEAR FONTA FLORA, N. C., FOR 1907.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.		4.00	1.10	1.00	0.80	1.10	0.80	1.10
2.		2.50	1.10	1.00	.80	1.10	1.00	1.10
3.		1.80	1.20	1.00	.80	1.10	1.00	1.10
4.		1.50	1.10	.90	.75	1.05	1.00	1.10
5.		1.50	1.10	.90	.75	1.05	1.00	1.10
6.		1.20	1.10	.90	.80	.90	1.00	1.05
7.		1.20	1.10	.90	.80	.90	1.00	1.05
8.		1.20	1.05	.90	.80	.90	1.00	1.05
9.		1.50	1.05	.90	.80	.90	1.00	1.10
10.		1.50	1.00	.90	.80	.85	1.00	1.70
11.		1.20	1.00	.90	1.20	.85	1.00	1.60
12.		1.20	1.00	.90	1.00	.90	1.00	1.60
13.		1.30	1.00	.90	1.00	.90	1.00	1.60
14.		1.20	2.50	.90	1.00	.90	1.00	1.70
15.		1.20	2.30	.80	.80	.90	1.00	1.60
16.		1.10	2.40	.80	.80	.90	1.00	1.55
17.		1.10	1.10	.80	.80	.90	1.00	1.50
18.		1.10	1.20	1.20	.80	.90	1.05	1.50
19.		1.10	1.20	1.10	.80	.90	1.10	1.40
20.	1.00	1.00	1.10	1.00	.80	.80	1.10	1.30
21.	1.00	1.10	1.15	1.00	.80	.80	1.20	1.20
22.	1.00	1.10	1.10	.90	.80	.80	1.25	1.20
23.	1.00	1.10	1.10	.90	4.00	.80	1.30	3.00
24.	1.00	1.20	1.10	1.20	2.00	.80	1.30	2.50
25.	1.00	1.20	1.10	1.00	1.50	.80	1.25	1.70
26.	1.10	1.20	1.10	1.00	1.10	.80	1.20	1.50
27.	1.10	1.20	1.00	.90	1.10	.85	1.20	1.50
28.	1.00	1.50	1.00	.90	1.15	.80	1.15	1.55
29.	1.00	1.20	1.00	.90	1.20	.80	1.15	1.55
30.	1.00	1.20	1.05	.80	1.10	.80	1.10	1.80
31.	1.00		1.00	.80		.80		1.60

DAILY GAGE HEIGHT, IN FEET, OF LINVILLE RIVER AT FONTA FLORA, N. C., FOR 1908.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.
1.....	1.50	1.10	1.50	1.30	1.40	1.15	1.20	1.40
2.....	1.45	1.10	1.50	1.30	1.30	1.10	1.30	1.30
3.....	1.40	1.10	1.50	1.30	1.30	1.10	1.70	1.20
4.....	1.30	1.10	1.50	1.30	1.30	1.10	1.70	1.20
5.....	1.50	1.10	1.55	1.30	1.30	1.30	1.80	1.30
6.....	1.40	1.20	1.60	1.25	1.30	1.20	1.70	1.30
7.....	1.35	1.20	1.60	1.20	1.50	1.10	1.60	1.30
8.....	1.30	1.20	1.50	1.20	1.50	1.10	1.60	1.20
9.....	1.30	1.20	1.50	1.20	1.50	1.10	2.00	1.20
10.....	1.40	1.30	1.50	1.20	1.40	1.10	1.60	1.20
11.....	1.50	1.30	1.50	1.20	1.30	1.10	1.50	1.15
12.....	4.00	2.20	1.50	1.20	1.30	1.20	1.40	1.10
13.....	2.00	2.50	1.50	1.15	1.25	1.20	1.30	1.10
14.....	1.70	2.30	1.45	1.15	1.20	1.10	1.30	1.10
15.....	1.60	5.30	1.35	1.10	1.20	2.00	1.20	1.30
16.....	1.60	2.00	1.20	1.70	1.15	1.50	1.20	1.10
17.....	1.50	1.90	1.20	1.50	1.15	1.30	1.10	1.10
18.....	1.50	1.80	1.20	1.50	1.10	1.10	1.10	1.35
19.....	1.40	1.60	1.20	1.40	1.40	1.10	1.10	1.15
20.....	1.30	1.50	1.20	1.35	1.30	1.10	1.10	1.20
21.....	1.30	1.45	1.30	1.20	1.20	1.70	1.10	1.30
22.....	1.30	1.40	1.30	1.20	1.20	1.60	1.10	1.20
23.....	1.30	1.30	1.50	1.15	1.20	1.50	1.10	1.70
24.....	1.25	1.30	1.50	1.10	1.20	1.40	1.05	1.50
25.....	1.20	1.30	1.50	3.00	1.20	1.30	1.10	4.50
26.....	1.15	1.30	1.50	2.00	1.20	1.30	1.10	4.00
27.....	1.15	1.25	1.45	1.80	1.20	1.20	1.10	-----
28.....	1.15	1.20	1.40	1.70	1.20	1.20	1.70	-----
29.....	1.10	1.20	1.30	1.50	1.30	1.15	1.80	-----
30.....	1.10	-----	1.30	1.50	1.20	1.10	1.80	-----
31.....	1.10	-----	1.30	-----	1.20	-----	1.50	-----

RATING TABLE FOR LINVILLE RIVER AT FONTA FLORA, N. C., FOR 1907 AND 1908.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
.70	30	.90	72	1.10	124	1.30	190
.75	40	.95	84	1.15	140	----	---
.80	50	1.00	96	1.20	156	----	---
.85	61	1.05	110	1.25	172	----	---

## MILL CREEK AT OLD FORT, N. C.

This station, located at the footbridge in Old Fort, was established on May 24, 1907.

The vertical gage is attached to a special timber which is driven in the river bank and spiked to a sycamore tree on the left bank, about 500 feet above the footbridge.

The right bank is high, but the left will overflow. Bed of stream is gravel and probably shifting.

The station was discontinued at the end of 1907.

DISCHARGE MEASUREMENTS OF MILL CREEK AT OLD FORT, N. C., FOR 1907.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
May 24	Warren E. Hall	25	27	1.04	1.50	26
May 25	do	25	28	1.25	1.52	35
May 25	do	45	44	0.75	1.52	33
July 10	do	25	25	1.12	1.50	28
July 10	do	25	26	1.00	1.50	26
Sept. 25	do	25	22	0.95	1.44	21

DAILY GAGE HEIGHT, IN FEET, OF MILL CREEK AT OLD FORT, N. C., FOR 1907.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		2.60	1.70	1.60	1.10	1.60	1.60	1.60
2		2.40	1.70	1.60	1.10	1.60	1.60	1.80
3		2.40	1.70	1.50	1.10	1.50	1.60	1.60
4		1.20	1.70	1.50	1.10	1.50	1.60	1.60
5		1.80	1.70	1.50	1.10	1.50	1.60	1.60
6		2.20	1.70	1.50	1.10	1.50	1.60	1.50
7		1.60	1.60	1.60	1.70	1.50	1.60	1.50
8		1.60	1.60	1.50	1.40	1.50	1.60	1.50
9		1.70	1.50	1.50	1.20	1.50	1.60	1.50
10		1.70	1.50	1.50	1.10	1.50	1.60	1.40
11		1.80	1.60	1.40	1.10	1.50	1.60	1.40
12		1.80	1.40	1.40	1.10	1.50	1.60	1.40
13		1.70	1.20	1.40	1.00	1.40	1.60	1.40
14		1.70	1.20	1.40	1.00	1.40	1.60	1.80
15		1.70	1.10	1.50	1.00	1.40	1.60	2.20
16		1.70	1.40	1.40	1.00	1.40	1.60	2.00
17		1.70	1.20	1.60	1.00	1.40	1.60	2.00
18		1.70	1.60	1.60	1.00	1.40	1.60	1.80
19		1.70	1.60	1.50	1.00	1.40	1.60	1.60
20		1.70	1.60	1.50	1.00	1.40	1.60	1.60
21		1.70	1.60	1.50	1.00	1.40	1.80	1.50
22		1.70	1.50	1.40	2.20	1.40	1.70	1.40
23		1.70	1.50	1.40	2.00	1.40	1.60	1.40
24	1.50	1.80	1.50	1.40	1.60	1.40	2.10	1.40
25	1.50	1.70	1.70	1.30	1.50	1.80	2.00	1.40
26	1.50	1.70	1.60	1.30	1.40	1.80	1.90	1.40
27	1.50	1.70	1.60	1.30	1.00	1.70	1.80	1.40
28	1.40	1.70	1.60	1.20	1.80	1.70	1.70	2.60
29	1.40	1.70	1.60	1.20	1.70	1.70	1.60	2.40
30	1.40	1.70	1.70	1.20	1.60	1.70	1.60	2.10
31	2.60		1.70	1.10		1.60		1.80

## BROAD RIVER NEAR UREE, N. C.

This station was established on May 17, 1907, near Uree Post-office, and about 4 miles above the mouth of Cove Creek.

The vertical gage is attached to a special timber which is driven into the bed of the stream, and spiked to a birch tree, located on the right bank about 130 feet below the bridge.

Discharge measurements are made from the steel wagon bridge having a main span of 120 feet over water and a short span of 50 feet at the right bank.

Both banks are high and are not liable to overflow; the current is good, and the bed is partly rock and will probably not change much.

The bench mark is the top of the downstream end of the first-floor beam from the right bank; elevation 24.00 feet.

## DISCHARGE MEASUREMENTS OF BROAD RIVER NEAR UREE, N. C., FOR 1907.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second-feet).
July 5	Warren E. Hall.....	103	113	1.12	1.52	127
May 17	---do.....	104	126	1.21	1.60	153
Sept. 30	---do.....	101	117	0.78	1.43	92

## DAILY GAGE HEIGHT, IN FEET, OF BROAD RIVER NEAR UREE, N. C., FOR 1907.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....		3.30	1.50	1.60	1.40	1.40	1.30	1.40
2.....		2.00	1.50	1.50	1.40	1.40	1.60	1.40
3.....		1.90	1.50	1.40	1.50	1.40	1.40	1.40
4.....		1.80	1.60	1.40	1.50	1.40	1.40	1.40
5.....		1.80	1.50	1.40	1.40	1.40	1.40	1.40
6.....		1.70	1.50	1.40	1.40	1.40	1.40	1.40
7.....		1.70	1.50	1.40	1.40	1.40	1.35	1.40
8.....		1.70	1.50	1.40	1.40	1.40	1.35	1.40
9.....		1.70	1.50	1.50	1.40	1.40	1.35	1.60
10.....		1.70	1.50	1.50	1.40	1.35	1.40	1.80
11.....		1.80	1.60	1.60	1.50	1.35	1.40	1.60
12.....		1.70	1.50	1.50	1.40	1.35	1.40	1.50
13.....		1.60	1.50	1.60	1.35	1.35	1.40	1.50
14.....		1.80	1.50	1.50	1.35	1.35	1.40	2.70
15.....		1.70	1.50	1.40	1.35	1.35	1.40	1.90
16.....		1.60	1.50	1.40	1.35	1.35	1.40	1.70
17.....	1.60	1.60	1.50	1.60	1.35	1.35	1.40	1.70
18.....	1.60	1.60	1.50	1.60	1.35	1.35	1.60	1.60
19.....	1.60	1.60	1.50	1.60	1.30	1.35	1.60	1.60
20.....	1.60	1.60	1.50	1.60	1.30	1.35	1.50	1.55
21.....	1.60	1.60	1.50	1.50	1.30	1.35	1.70	1.50
22.....	1.50	1.70	1.45	1.50	1.40	1.35	1.50	1.50
23.....	1.50	1.60	1.45	2.10	3.20	1.35	2.00	2.40
24.....	1.50	1.70	1.40	1.70	1.60	1.35	1.80	1.90
25.....	1.60	1.70	1.40	1.50	1.50	1.35	1.60	1.80
26.....	1.70	1.60	1.40	1.60	1.40	1.35	1.50	1.70
27.....	1.70	1.60	1.40	1.50	1.40	1.40	1.50	1.70
28.....	1.60	1.60	1.45	1.40	1.60	1.35	1.50	1.70
29.....	1.50	1.70	1.40	1.50	1.60	1.35	1.45	1.65
30.....	1.50	1.60	1.80	1.40	1.45	1.35	1.40	2.20
31.....	1.60		1.50	1.40		1.35		2.00



MEAN DAILY GAGE HEIGHT, IN FEET, OF BROAD RIVER NEAR UREE, N. C., FOR 1908.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1.....	1.80	1.80	1.80	1.80	1.80	1.80	1.60	1.75	2.00	1.70
2.....	1.70	1.80	1.80	1.80	1.75	1.75	1.70	1.70	2.00	1.70
3.....	1.70	1.80	1.80	1.75	1.75	1.80	2.00	1.70	2.00	1.70
4.....	1.70	1.70	1.80	1.75	1.70	1.75	1.80	1.70	2.00	1.70
5.....	1.70	1.60	1.80	1.70	1.70	1.80	2.10	1.70	2.20	1.70
6.....	1.70	1.70	1.80	1.70	1.80	1.80	2.20	2.00	2.00	1.70
7.....	1.80	1.65	1.80	1.70	2.50	1.80	2.00	1.90	2.20	1.70
8.....	1.70	1.65	1.75	1.70	2.00	1.70	1.80	2.00	2.00	1.70
9.....	1.70	1.65	1.80	1.80	1.90	1.70	2.50	2.00	2.00	2.20
10.....	1.60	1.80	1.80	1.80	1.80	1.70	2.10	2.00	1.90	2.40
11.....	3.20	2.00	1.80	1.70	1.80	1.80	1.80	1.90	1.90	1.90
12.....	3.40	2.50	1.80	1.70	1.75	1.70	1.80	1.80	1.85	1.90
13.....	2.40	2.45	1.75	1.70	1.70	1.80	1.80	1.80	1.85	1.80
14.....	2.10	2.40	1.75	1.70	1.70	1.75	1.80	1.80	1.85	1.80
15.....	2.00	3.90	1.75	2.10	1.70	1.75	1.75	1.80	1.80	1.75
16.....	1.90	2.40	1.75	1.90	1.70	1.70	1.70	1.80	1.80	1.75
17.....	1.90	2.10	1.70	1.80	1.80	1.70	1.70	2.00	1.80	1.75
18.....	1.80	2.00	1.70	1.80	1.80	1.70	1.70	1.80	1.80	1.70
19.....	1.80	2.00	1.70	1.80	2.10	1.70	1.70	1.75	1.80	1.70
20.....	1.80	1.90	2.00	1.80	1.90	1.70	1.65	1.75	1.80	1.70
21.....	1.70	1.90	1.90	1.75	1.80	1.75	1.65	1.80	1.75	1.70
22.....	1.70	1.90	1.80	1.75	1.80	1.70	1.70	1.80	1.75	2.00
23.....	1.70	1.90	2.10	1.75	1.90	1.75	2.90	2.30	1.75	4.90
24.....	1.60	1.80	2.20	1.70	1.90	1.70	1.80	2.50	1.75	2.80
25.....	1.60	1.80	2.10	2.40	1.80	1.70	1.75	9.20	1.75	2.40
26.....	1.70	1.90	1.90	2.00	1.80	1.65	1.90	4.50	1.70	2.10
27.....	1.70	1.90	1.90	1.90	2.00	1.65	1.90	2.70	1.80	2.00
28.....	1.60	1.90	1.90	1.80	1.80	1.60	2.10	2.40	1.90	2.40
29.....	1.60	1.80	1.85	1.80	1.80	1.60	2.20	2.20	1.80	2.70
30.....	1.60	-----	1.80	1.90	1.90	1.60	1.90	2.20	1.70	2.20
31.....	1.60	-----	-----	-----	1.80	-----	1.80	2.10	-----	2.20

RATING TABLE FOR BROAD RIVER NEAR UREE, N. C., FOR 1907 AND 1908.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.30	50	1.50	118	1.70	186	1.90	254
1.35	67	1.55	135	1.75	203	1.95	271
1.40	84	1.60	152	1.80	220	2.00	288
1.45	101	1.65	169	1.85	237	----	---

## SECOND BROAD RIVER NEAR LOGAN'S STORE, N. C.

The station here was established on May 16, 1907. It is about 2 miles south of Logan's Store, and 6 miles north of Rutherfordton, N. C.

The vertical gage is attached to a tree on the right bank about 100 yards below the bridge.

Discharge measurements are made from the wagon bridge, which is two steel spans supported by tubular piers.

The right bank will overflow, but the left will not. The current is swift and the bed is sandy.

The bench mark is the top of the downstream end of the first-floor beam from the left end of the bridge; elevation, 17.00 feet.

DISCHARGE MEASUREMENTS OF SECOND BROAD RIVER NEAR LOGAN'S STORE, N. C., IN 1907.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
May 16	Warren E. Hall	55	63	1.76	1.50	111
July 6	do.	55	71	2.03	1.63	144
Sept. 28	do.	52	67	1.92	1.57	129

DAILY GAGE HEIGHT, IN FEET, OF SECOND BROAD RIVER NEAR LOGAN'S STORE, N. C., FOR 1907.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.		3.60	1.40	1.30	1.20	1.30	1.20	1.40
2.		2.70	1.40	1.20	1.20	1.30	1.60	1.40
3.		2.30	1.50	1.20	1.40	1.30	1.40	1.30
4.		1.90	3.00	1.20	1.30	1.30	1.30	1.30
5.		1.70	2.00	1.20	1.20	1.30	1.20	1.30
6.		1.60	1.70	1.20	1.20	1.20	1.20	1.30
7.		1.60	1.50	1.20	1.20	1.20	1.20	1.30
8.		1.70	1.40	1.50	1.30	1.40	1.20	1.30
9.		1.60	1.30	1.30	1.30	1.20	1.20	1.60
10.		1.60	1.30	1.30	1.20	1.20	1.30	2.60
11.		1.80	1.60	1.30	1.70	1.20	1.30	1.80
12.		1.50	1.40	1.20	1.20	1.20	1.30	1.60
13.		1.50	1.40	1.20	1.20	1.20	1.20	1.50
14.		1.70	1.50	1.50	1.20	1.20	1.20	5.60
15.		1.50	1.40	1.20	1.20	1.20	1.20	3.30
16.	1.50	1.40	1.30	1.30	1.20	1.20	1.20	2.30
17.	1.50	1.40	1.30	1.30	1.20	1.20	1.20	1.90
18.	1.40	1.40	1.30	1.40	1.20	1.20	1.20	1.80
19.	1.40	1.40	1.30	1.30	1.20	1.20	1.40	1.70
20.	1.40	1.30	1.30	1.20	1.10	1.20	1.30	1.60
21.	1.40	1.50	1.20	1.40	1.10	1.20	2.40	1.60
22.	1.40	1.40	1.20	1.40	1.10	1.20	1.80	1.60
23.	1.40	1.50	1.20	1.80	2.90	1.20	2.20	9.00
24.	1.40	1.60	1.20	1.70	1.90	1.20	3.80	3.30
25.	1.40	1.50	1.20	1.40	1.50	1.20	2.10	2.20
26.	1.60	1.50	1.20	1.30	1.30	1.20	1.70	1.90
27.	2.00	1.40	1.20	1.30	1.30	1.40	1.50	1.70
28.	1.50	1.50	1.20	1.20	1.50	1.30	1.50	1.70
29.	1.40	1.80	1.20	1.20	1.50	1.20	1.50	1.60
30.	1.40	1.60	1.50	1.20	1.30	1.20	1.50	2.90
31.	1.50		1.30	1.20		1.20		3.10

DAILY GAGE HEIGHT, IN FEET, OF SECOND BROAD RIVER AT LOGAN'S STORE, N. C., FOR 1908.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1.....	2.20	1.70	1.80	1.70	1.70	1.50	17.....	1.80	2.70	1.60	2.00	1.50	1.50
2.....	2.00	1.60	1.80	1.70	1.60	1.50	18.....	1.70	2.30	1.60	1.90	1.50	1.40
3.....	1.90	1.40	1.70	1.70	1.60	1.40	19.....	1.70	2.50	1.60	1.80	1.70	1.40
4.....	1.70	1.30	1.70	1.60	1.60	1.40	20.....	1.60	2.50	1.90	1.70	1.60	1.40
5.....	1.90	1.50	1.70	1.60	1.50	1.60	21.....	1.60	2.20	2.60	1.70	1.60	1.80
6.....	1.70	1.60	1.70	1.60	1.70	1.50	22.....	1.50	2.10	2.10	1.60	1.50	1.50
7.....	2.30	1.80	1.70	1.60	3.30	1.50	23.....	1.50	1.90	2.40	1.60	1.50	2.00
8.....	2.50	1.60	1.70	1.60	2.30	1.50	24.....	1.30	1.80	6.80	1.60	1.60	1.50
9.....	2.00	1.70	1.70	1.60	1.90	1.40	25.....	1.30	1.80	2.90	1.80	1.70	1.50
10.....	1.80	1.70	1.70	1.60	1.80	1.40	26.....	1.40	2.70	2.30	1.80	1.50	1.50
11.....	1.80	2.20	1.60	1.50	1.70	1.60	27.....	1.60	2.30	2.10	1.80	1.50	1.50
12.....	8.50	4.60	1.80	1.50	1.60	1.50	28.....	1.50	2.00	1.90	1.70	1.50	1.40
13.....	3.40	5.10	1.60	1.50	1.60	1.50	29.....	1.50	1.90	1.80	1.60	1.50	1.40
14.....	2.40	3.70	1.60	1.50	1.60	1.50	30.....	1.50	-----	1.80	1.70	1.60	1.30
15.....	2.00	6.40	1.60	2.70	1.50	2.00	31.....	1.50	-----	1.70	-----	1.50	-----
16.....	1.80	3.90	1.60	2.40	1.50	1.50							

RATING TABLE FOR SECOND BROAD RIVER AT LOGAN'S STORE, N. C., FOR 1907 AND 1908.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.10	60	1.35	89	1.60	126	1.85	166
1.15	65	1.40	96	1.65	134	1.90	174
1.20	70	1.45	103	1.70	142	1.95	182
1.25	76	1.50	110	1.75	150	2.00	190
1.30	82	1.55	118	1.80	158	-----	---

## GREEN RIVER NEAR SALUDA, N. C.

The station here was established on May 9, 1907, though discharge measurements referred to a bench mark had been previously made. It is located at the lower steel bridge about 3 miles east of Hendersonville, N. C.

The chain gage box is attached to the downstream fencing of the bridge, in the first panel from the left end of the bridge. The bottom of the gage box is 18.77 feet above datum, and the chain length is 20.77 feet. Discharge measurements are made from the single-span steel bridge, which is supported by stone abutments.

The banks will probably not overflow. The current is rather slow at low water. The bed is partly rock and should not change much.

The bench mark is the top of the downstream end of the first-floor beam from the left end of the bridge; elevation, 16.00 feet.

## DISCHARGE MEASUREMENTS OF GREEN RIVER NEAR SALUDA, N. C., IN 1907.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1905.						
Nov. 13	Warren E. Hall	45	87	0.84	1.65	73
Nov. 13	do.	45	88	0.82	1.65	72
1906.						
June 13	Warren E. Hall	45	184	3.57	3.30	657
Sept. 14	do.	45	125	1.25	1.14	156
Sept. 14	do.	45	125	1.27	1.14	159
1907.						
April 4	Warren E. Hall	45	104	0.95	1.85	99
April 4	do.	45	104	0.93	1.85	97
May 9	do.	45	104	1.23	1.98	128
July 13	do.	45	110	0.77	1.71	85
July 13	Frank P. Thomas	45	110	0.76	1.70	84
Aug. 17	Warren E. Hall	45	101	0.58	1.54	59
Aug. 17	do.	45	100	0.58	1.54	58
Sept. 20	do.	45	96	0.42	1.40	40
Dec. 10	do.	45	171	2.96	3.16	506
Dec. 10	do.	45	168	2.89	3.12	486

## DAILY GAGE HEIGHT, IN FEET, OF GREEN RIVER NEAR SALUDA, N. C., FOR 1907.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		3.10	1.90	1.50	1.40	1.60	1.40	1.80
2		2.20	1.80	1.50	1.40	1.60	2.10	1.80
3		2.10	1.80	1.50	1.60	1.60	1.80	1.80
4		2.00	1.80	1.50	1.70	1.50	1.60	1.70
5		1.90	1.80	1.50	1.50	1.50	1.60	1.60
6		1.90	1.80	1.50	1.50	1.50	1.60	2.00
7		1.80	1.70	1.50	1.50	1.50	1.50	1.70
8		1.90	1.70	1.60	1.50	2.10	1.50	1.70
9	2.00	1.80	1.70	1.50	1.50	1.60	1.50	2.30
10	1.90	3.20	1.70	1.50	1.50	1.60	1.60	3.80
11	2.00	2.10	1.80	1.50	1.80	1.50	1.60	2.50
12	1.90	2.00	1.70	1.60	1.50	1.50	1.50	2.20
13	1.90	1.90	1.80	1.50	1.40	1.50	1.50	2.10
14	1.90	1.90	1.70	1.60	1.40	1.50	1.50	4.50
15	2.00	1.80	1.70	1.50	1.40	1.50	1.50	3.00
16	1.90	1.80	1.70	1.70	1.50	1.50	1.50	2.60
17	1.80	1.80	1.60	1.60	1.50	1.50	1.50	2.40
18	1.80	1.80	1.70	1.70	1.50	1.50	2.00	2.30
19	1.80	1.80	1.70	1.60	1.40	1.50	1.90	2.20
20	1.80	1.70	1.80	1.60	1.40	1.50	1.80	2.10
21	1.80	1.80	1.60	1.50	1.40	1.50	3.00	2.10
22	1.80	1.90	1.60	1.60	1.40	1.50	2.30	2.10
23	1.80	1.90	1.60	1.70	4.00	1.50	2.40	4.60
24	1.80	1.80	1.50	1.80	2.00	1.50	3.10	2.90
25	1.80	1.80	1.60	1.60	1.70	1.50	2.30	2.60
26	2.50	1.70	1.60	1.50	1.60	1.50	2.10	2.40
27	2.00	1.70	1.60	1.50	1.60	1.50	2.00	2.40
28	1.80	1.80	1.60	1.50	1.70	1.50	1.90	2.30
29	1.80	3.50	1.70	1.50	1.90	1.50	1.90	2.20
30	1.90	2.00	1.70	1.50	1.70	1.50	1.80	3.60
31	1.90		1.60	1.40		1.50		2.70

## MEAN DAILY GAGE HEIGHT, IN FEET, OF GREEN RIVER NEAR SALUDA, N. C., FOR 1908.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1.....	2.50	2.40	2.40	2.20	2.30	1.90	1.70	1.80	2.30	1.90
2.....	2.40	2.10	2.40	2.20	2.20	1.90	1.80	1.80	2.30	1.90
3.....	2.30	2.20	2.40	2.20	2.20	2.10	2.20	1.80	2.20	1.80
4.....	2.30	2.10	2.40	2.20	2.20	2.00	2.00	1.70	2.20	1.90
5.....	2.40	2.10	2.30	2.10	2.20	2.60	2.40	2.00	2.60	1.80
6.....	2.30	2.20	2.30	2.20	2.20	2.10	2.40	2.20	2.50	1.80
7.....	2.40	2.20	2.30	2.10	3.10	2.00	2.10	2.00	2.30	1.80
8.....	2.30	2.10	2.20	2.10	2.40	2.00	2.00	1.90	2.20	1.80
9.....	2.20	2.10	2.20	2.10	2.30	1.90	2.30	1.90	2.20	2.00
10.....	2.20	2.20	2.20	2.10	2.20	1.90	2.20	2.00	2.20	2.50
11.....	2.20	2.30	2.20	2.10	2.20	1.90	1.90	1.90	2.10	2.00
12.....	3.80	3.10	2.40	2.00	2.20	1.90	1.90	1.80	2.10	1.90
13.....	2.90	3.40	2.30	2.00	2.10	1.90	1.80	1.70	2.10	1.90
14.....	2.70	3.10	2.20	2.00	2.10	1.90	1.80	1.70	2.10	1.90
15.....	2.90	7.60	2.20	2.90	2.10	2.10	1.80	1.70	2.00	1.90
16.....	2.50	3.60	2.20	2.70	2.10	1.90	2.00	1.70	2.00	1.90
17.....	2.40	3.10	2.10	2.50	2.20	1.90	1.95	2.00	2.00	1.80
18.....	2.40	2.90	2.10	2.40	2.30	1.90	1.80	1.80	2.00	1.80
19.....	2.30	2.90	2.10	2.30	2.20	1.80	1.80	1.80	2.00	1.80
20.....	2.30	2.80	2.30	2.30	2.10	1.80	1.70	2.00	2.00	1.80
21.....	2.30	2.80	2.40	2.20	2.10	1.80	1.70	1.90	2.00	1.80
22.....	2.30	2.60	2.30	2.20	2.10	1.80	1.80	2.50	2.00	1.80
23.....	2.20	2.50	2.50	2.20	2.10	1.80	3.10	2.90	2.00	4.00
24.....	2.10	2.50	3.20	2.10	2.00	1.80	1.90	2.80	1.90	2.80
25.....	2.10	2.50	2.70	3.20	2.00	1.90	1.80	7.40	1.90	2.40
26.....	2.10	2.80	2.50	2.50	2.00	1.80	1.80	4.40	1.90	2.20
27.....	2.30	2.60	2.40	2.40	2.00	1.70	1.80	3.20	2.00	2.00
28.....	2.20	2.50	2.40	2.40	2.00	1.70	1.80	2.80	2.20	2.20
29.....	2.10	2.50	2.30	2.30	2.00	1.70	1.90	2.60	2.00	2.80
30.....	2.10	-----	2.30	2.40	2.00	1.70	2.10	2.50	1.90	2.70
31.....	2.10	-----	2.30	-----	1.90	-----	1.90	2.40	-----	2.40

RATING TABLE FOR GREEN RIVER NEAR SALUDA, N. C., FOR 1907 AND 1908.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.40	40	1.65	73	1.90	112	2.15	166
1.45	46	1.70	80	1.95	122	2.20	178
1.50	52	1.75	88	2.00	132	2.25	190
1.55	59	1.80	96	2.05	142		
1.60	66	1.85	104	2.10	154		

## RIVER PROFILE SURVEYS IN THE CATAWBA RIVER DRAINAGE BASIN.

## SURVEY OF CATAWBA RIVER.

Catawba River was surveyed from the Halltown road crossing, near Marion, N. C., down the river to the mouth of Johnsons Mill Creek, near Connelly Springs, N. C.—a distance of 45 miles. A line of flying levels was run in connection with the plane-table stadia traverse, which was on the scale of 1:22,500, based on a permanent bench mark of the United States Geological Survey at Marion, N. C. This flying line is connected with a precise line along the Southern Railway, run by the Geological Survey in 1896, at Bridgewater, Glen Alpine, Morganton, and Connelly Springs, at each of which points there is a permanent

bench mark. There were only three temporary bench marks set along the river, but there were 160 water-surface elevations recorded, all of which were adjusted to the mean reading on the gage established at the upper bridge near Morganton. The work was done in July, August, and September, 1903, by R. C. Howard and S. A. Obenshain, under the direction of W. C. Hall, topographer.

In the stretch of river surveyed there is a total fall of 243 feet. At present there is only one crude dam—at John River Road Ford, where there is a fall of 4 feet, supplying power to operate Hunter's gristmill. There is a dam site near Connelly Ford. The combined fall of two shoals about half a mile apart is 12.3 feet, and a long, rocky island in the lower part of the shoal would somewhat facilitate the construction of a dam. At this point the river is about 200 feet wide, with rocky cliffs on both banks. The river bottom is very fertile, the principal crops being corn and hay.

ELEVATIONS ON CATAWBA RIVER BETWEEN HALLTOWN ROAD AND CONNELLY SPRINGS, N. C.

Distance in Miles.		Elevation in Feet.
0.0	Halltown Road Ford, head of island, head of shoals, surface of water...	*1,189
.1	Foot of shoals, surface of water.....	1,187
.2	Head of shoals, surface of water.....	1,187
.2	Foot of shoals, surface of water.....	1,184
.5	Head of shoals, surface of water.....	1,184
.7	Foot of shoals, surface of water.....	1,179
1.1	Mouth of North Fork, 0.5 mile above, head of shoals, surface of water...	1,179
1.1	Foot of shoals, surface of water.....	1,177
1.3	Head of shoals, surface of water.....	1,177
1.3	Foot of shoals, surface of water.....	1,175
1.7	Head of shoals, surface of water.....	1,174
1.8	Foot of shoals, surface of water.....	1,172
2.1	Head of shoals, surface of water.....	1,170
2.3	Foot of shoals, surface of water.....	1,167
2.4	Head of shoals, surface of water.....	1,166
3.2	Foot of shoals, surface of water.....	1,157
3.4	Head of shoals, surface of water.....	1,156
3.4	Foot of shoals, surface of water.....	1,154
4	Head of shoals, surface of water.....	1,153
4.2	North bank of island, foot of shoals, surface of water.....	1,146
4.4	Head of island, head of shoals, surface of water.....	1,146
4.4	Foot of island, foot of shoals, surface of water.....	1,141
4.7	Head of shoals, surface of water.....	1,140
4.7	Foot of shoals, surface of water.....	1,137
4.8	Head of shoals, surface of water.....	1,137
4.8	Foot of shoals, surface of water.....	1,134
5.1	Head of shoals, surface of water.....	1,134
5.1	Foot of shoals, surface of water.....	1,133
5.3	Head of shoals, surface of water.....	1,133
5.3	Foot of shoals, surface of water.....	1,131
5.4	Head of shoals, surface of water.....	1,131
5.4	Foot of shoals, surface of water.....	1,130
5.7	Connelly Ford, head of shoals, surface of water.....	1,130
5.8	Foot of shoals, surface of water.....	1,127
6	Head of shoals, surface of water.....	1,126
6	Foot of shoals, surface of water.....	1,126
6.1	Head of shoals, surface of water.....	1,125
6.1	Small island in shoals, foot of shoals, surface of water.....	1,124
6.6	Between large islands, head of shoals, surface of water.....	1,124
6.7	Foot of islands, foot of shoals, surface of water.....	1,122
6.9	At head of broad flood channel, head of shoals, surface of water.....	1,122

\*Adjusted to bench mark at Marion (McDowell County) courthouse; west face, at south end of portico, bronze tablet marked "1438"; elevation, 1,436.857 feet.

ELEVATIONS ON CATAWBA RIVER BETWEEN HALLTOWN ROAD AND CONNELLY SPRINGS, N. C.—  
Continued.

Distance in Miles.		Elevation in Feet.
7	Foot of shoals, surface of water.....	1,119
7.3	At foot of broad channel, head of shoals, surface of water.....	1,119
7.3	Foot of shoals, surface of water.....	1,118
7.5	Head of shoals, surface of water.....	1,116
7.5	Foot of shoals, surface of water.....	1,115
7.8	Head of shoals, surface of water.....	1,115
7.8	Foot of shoals, surface of water.....	1,114
8.2	Head of shoals, surface of water.....	1,113
8.5	Foot of shoals, surface of water.....	1,108
8.5	Head of shoals, surface of water.....	1,108
8.7	Foot of shoals, surface of water.....	1,105
9.2	John River Road head of shoals, surface of water.....	1,103
9.2	Foot of shoals, surface of water.....	1,102
9.8	Just below ford head of shoals, surface of water.....	1,101
9.8	Foot of shoals, surface of water.....	1,099
10	Head of island, head of shoals, surface of water.....	1,099
10.2	Foot of shoals, surface of water.....	1,094
10.8	Head of shoals at head of island, surface of water.....	1,094
10.9	Foot of island, foot of shoals, surface of water.....	1,092
11.1	Head of shoals, surface of water.....	1,092
11.1	Foot of shoals, surface of water.....	1,089
11.6	Just above dam surface of water.....	1,089
11.6	Below ford, foot of shoals, surface of water.....	1,084
12	Head of shoals, surface of water.....	1,083
12	Foot of shoals, surface of water.....	1,079
12.4	Head of shoals, surface of water.....	1,079
12.4	Foot of shoals, surface of water.....	1,079
13	Head of shoals, surface of water.....	1,078
13.1	Foot of shoals, surface of water.....	1,075
13.3	Head of shoals, surface of water.....	1,075
13.3	Foot of shoals, surface of water.....	1,074
13.5	Below head of island, head of shoals, surface of water.....	1,074
13.7	Foot of two islands, foot of shoals, surface of water.....	1,070
13.9	Head of shoals, surface of water.....	1,070
13.9	Foot of shoals, surface of water.....	1,070
14.4	Head of shoals, surface of water.....	1,069
14.4	Foot of shoals, surface of water.....	1,069
14.5	Bridgewater, in front of station, top of north rail.....	*1,095.7
14.5	Head of shoals, surface of water.....	1,068
14.6	Foot of shoals, surface of water.....	1,068
15	Head of shoals, surface of water.....	1,067
15	Foot of shoals surface of water.....	1,066
15.1	Just above head of shoals, surface of water.....	1,066
15.2	Head of shoals surface of water.....	1,065
15.2	Foot of shoals, surface of water.....	1,062
15.4	Head of shoals surface of water.....	1,062
15.5	Foot of shoals, surface of water.....	1,062
15.8	Head of shoals, surface of water.....	1,061
15.9	Foot of shoals, surface of water.....	1,061
16.4	Head of shoals, surface of water.....	1,058
16.8	Foot of shoals, surface of water.....	1,056
17	Head of shoals, surface of water.....	1,054
17.2	Foot of shoals, surface of water.....	1,054
18	Just above head of upper island, head of shoals, surface of water.....	1,051
18.1	Between island and south bank of river, foot of shoals, surface of water.....	1,049
18.2	Mouth of Inville River below ford, at head of island and south bank, head of shoals, surface of water.....	1,048
18.4	Between island and south bank, foot of shoals, surface of water.....	1,046
18.7	Head of small island head of shoals, surface of water.....	1,045
18.7	Center of island, foot of shoals, surface of water.....	1,045
18.9	Head of two small islands, head of shoals, surface of water.....	1,045
19.1	Foot of shoals, surface of water.....	1,040

\*Bridgewater 0.4 mile east of; bridge seat at west end of Muddy Creek Bridge, 2.75 feet south of south rail, copper bolt marked "U. S. G. S., 1091"; elevation, 1,089.549 feet.

ELEVATIONS ON CATAWBA RIVER BETWEEN HALLTOWN ROAD AND CONNELLY SPRINGS, N. C.—  
Continued.

Distance in Miles.		Elevation in Feet.
19.6	Long, narrow island along north bank, head of short shoal, surface of water.....	1,030
19.8	Head of shoals, surface of water.....	1,038
19.8	Foot of shoals, surface of water.....	1,037
20.1	Above ford, head of shoals, surface of water.....	1,036
20.3	Head of shoals, surface of water.....	1,035
20.4	Foot of shoals, surface of water.....	1,033
20.9	Head of shoals, surface of water.....	1,032
20.9	Foot of shoals, surface of water.....	1,031
21.3	Head of shoals, surface of water.....	1,031
21.3	Foot of shoals, surface of water.....	1,030
21.5	Head of shoals, surface of water.....	1,030
21.7	Head of large island, head of shoals, surface of water.....	1,030
22	250 feet below foot of large island, foot of shoals, surface of water.....	1,026
22.4	Ford, head of shoals, surface of water.....	1,026
22.5	Foot of shoals, surface of water.....	1,025
23.4	Head of shoals, surface of water.....	1,024
23.7	Head of shoals, surface of water.....	1,023
23.7	Foot of shoals, surface of water.....	1,022
24	Head of shoals, surface of water.....	1,022
24.3	Foot of shoals, surface of water.....	1,016
25	Avery Ford, 50 feet above, head of shoals, surface of water.....	*1,015
25	Foot of shoals, surface of water.....	1,013
25.4	Head of shoals, surface of water.....	1,013
25.4	Foot of shoals, surface of water.....	1,012
26.6	Between long island and north bank of river, head of shoals, surface of water.....	1,000
26.6	Foot of shoals, surface of water.....	1,007
27.2	Surface of water.....	1,006
28.1	Head of shoals, surface of water.....	1,004
28.2	Head of long, narrow island, foot of shoals, surface of water.....	1,003
29	Greenlea Ford, head of shoals, surface of water.....	1,001
29.1	Foot of shoals, surface of water.....	1,001
29.4	Between island and mouth, head of shoals, surface of water.....	1,000
29.6	Foot of island, foot of shoals.....	998
29.9	Head of shoals, surface of water.....	998
29.9	Foot of shoals, surface of water.....	997
30.2	Upper Morganton Bridge, head of shoals under, surface of water.....	996
31.7	Fleming Ford, head of islands, head of shoals, surface of water.....	992
32	Foot of shoals, surface of water.....	988
33	Lower Morganton Bridge, under, surface of water.....	986
33.5	Head of shoals, surface of water.....	986
34.2	Foot of shoals, surface of water.....	977
34.4	Head of shoals, surface of water.....	976
34.8	Below island at mouth of creek on south bank, foot of shoals, surface of water.....	974
35.5	Mouth of John River, surface of water.....	972
37.1	Head of shoals, surface of water.....	969
37.9	Foot of shoals, surface of water.....	963
38.5	Huffman Ferry, north bank, west side of road, nail in post.....	974.2
	Huffman Ferry, at east corner of Huffman's house, nail in root of tree.....	1,011.75
38.5	Surface of water.....	961
38.7	Head of shoals, surface of water.....	959
40.7	At mouth of creek on south, head of shoals, surface of water.....	957
40.7	Foot of shoals, surface of water.....	956
41.2	Head of large island, head of shoals, surface of water.....	955
41.2	Between island and north bank of river, foot of shoals, surface of water.....	955
41.4	Foot of island, head of shoals, surface of water.....	955
41.4	Foot of shoals, surface of water.....	955

\*Circuit from White Ford to Avery Ford is adjusted to Glen Alpine, 73.2 feet north of north rail of main track, southeast corner of brick basement of Hennessee & Co.'s store, bronze tablet marked "1215"; elevation, 1,213.944 feet.

†Upper Morganton Bridge line adjusted to Morganton (Burke County) courthouse, extreme northwest corner of north portico, bronze tablet marked "1182"; elevation, 1,180.774 feet.



ELEVATIONS ON CATAWBA RIVER BETWEEN HALLTOWN ROAD AND CONNELLY SPRINGS, N. C.—  
*Continued.*

Distance in Miles.		Elevation in Feet.
41.6	Lovelady Ford, at head of small island between large island and south bank, head of shoals, surface of water .....	954
41.8	Lovelady Ford, north bank of river, surface of water .....	953
41.9	Foot of large island at foot of shoals, surface of water .....	951
43.6	County Ferry, 200 feet south of; west side of road, nail in box alder .....	968.8
43.6	Surface of water .....	948
43.8	Head of shoals, surface of water .....	947
43.8	Foot of shoals, surface of water .....	947
44.5	Head of shoals, surface of water .....	947
44.5	Foot of shoals, surface of water .....	946

\*Connelly Springs, 142.4 feet north of north rail of main track, James Hudson's brick store, south front, near east corner, bronze tablet marked "1193"; elevation, 1,191.762 feet.  
 Johnsons Mill Creek flows into Catawba 1.6 miles below County Ferry, south side of river.  
 NOTE.—Water-surface elevations adjusted to mean gage reading 1.8 feet at Upper Morganton Bridge; elevation of 1.8-foot mark, 996.3 feet.

## KANAWHA RIVER DRAINAGE BASIN.

## DESCRIPTION OF BASIN.

Kanawha River, which rises in Watauga, Ashe, and Alleghany counties, N. C., flows northwestward through Virginia and West Virginia and joins Ohio River at Point Pleasant, W. Va. In its upper course it is known as New River. The headwaters lie in the Appalachian Mountains, among the high ridges which form the divides between the drainage basin of this river and Yadkin River on the east and Holston River on the west. The upper tributaries drain narrow valleys of the mountainous region of North Carolina, and their slopes are generally steep and their beds rough. The main river cuts the Alleghany Front just below Pearisburg, Va.; thence the river's course is through a narrow valley of West Virginia over a rough bed with many falls and rapids. The basin is as beautiful and picturesque as any in the eastern part of the United States. The country on its lower courses, through which the Chesapeake and Ohio Railway passes, is noted for its scenic beauty. Below the junction with the Gauley the river is known as the Kanawha.

The principal tributaries of New River are Little River, which empties near Radford, Va., and the Greenbriar, which rises in the eastern part of West Virginia and joins the New at Hinton, W. Va.

## MEASUREMENTS OF STREAM FLOW.

## NEW RIVER NEAR OLDTOWN, VA.

This station, like those on the North and South forks of New River, was established to aid in the hydrographic investigations undertaken by the United States Geological Survey in the southern Appalachian area. It was established July 31, 1900, and is located about 2 miles west of Oldtown, at Austin's Ferry. The wire gage was fixed in an overhanging tree on the left bank, about 50 yards upstream from the ferry. The channel above and below the station is straight and the current swift. The right bank is high and rocky and is never submerged, but the left bank is lower, and at times floods cover it for a considerable distance.

The station was discontinued March 31, 1903.

## LIST OF DISCHARGE MEASUREMENTS OF NEW RIVER NEAR OLDTOWN, VA.

Date.	Hydrographer.	Gage Height (Feet).	Discharge (Second-feet).
1900.			
July 31	N. C. Curtis.....	0.70	1,541
Oct. 29	do.....	1.00	2,293
1901.			
June 29	N. C. Curtis.....	4.45	6,916
1903.			
Feb. 6	E. W. Myers.....	1.70	3,333

DAILY GAGE HEIGHT, IN FEET, OF NEW RIVER NEAR OLDTOWN, VA., FOR 1900.

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	0.60	0.50	0.40	0.70	1.00	17.....	0.30	1.50	0.40	0.50	0.80
2.....	.60	.40	.50	.70	.90	18.....	.30	.80	.30	.50	.70
3.....	.50	.30	.60	1.90	.80	19.....	.20	.50	.30	.50	.70
4.....	.50	.20	.70	2.20	1.50	20.....	.40	.40	.30	.50	.60
5.....	.40	.20	.90	1.70	2.70	21.....	.40	.50	.30	.50	.60
6.....	.40	.20	.90	1.30	1.80	22.....	.80	.50	.30	.60	.80
7.....	.40	.20	.80	1.00	1.50	23.....	.70	.50	.30	.60	.80
8.....	.30	.20	.70	.90	1.40	24.....	.60	.60	*8.20	.70	.80
9.....	.30	.10	.60	.80	1.40	25.....	.60	.50	3.00	.70	.50
10.....	.20	.10	.60	.80	1.20	26.....	.40	.80	1.90	4.90	.60
11.....	.20	.10	.50	.80	1.20	27.....	.30	.50	1.40	2.70	.60
12.....	.10	.10	.40	.70	1.10	28.....	.30	.40	1.20	1.50	.60
13.....	.00	.10	.40	.60	1.00	29.....	.30	.40	1.00	1.30	.60
14.....	.10	.50	.50	.70	1.00	30.....	1.00	.50	1.00	1.10	1.00
15.....	.60	1.60	.40	.70	.80	31.....	.70	-----	.80	-----	.90
16.....	.50	3.40	.40	.60	.80						

\*Estimated.

DAILY GAGE HEIGHT, IN FEET, OF NEW RIVER NEAR OLDTOWN, VA., FOR 1901.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	0.90	0.80	0.90	1.60	1.60	2.20	3.20	1.20	4.10	2.10	0.80	0.80
2.....	.80	.70	.80	2.50	1.40	2.00	2.20	1.10	3.10	3.10	.80	.80
3.....	.70	.60	.70	6.10	1.40	1.90	1.90	.90	2.60	2.30	.80	1.10
4.....	.70	1.00	.80	3.80	1.30	1.80	1.90	.90	2.40	1.90	.90	1.50
5.....	.60	.80	.70	2.60	1.20	1.70	1.90	.90	2.20	1.70	.90	1.50
6.....	.60	.80	.70	2.10	1.20	1.60	1.80	†13.00	2.10	1.50	.90	1.00
7.....	.70	.80	.60	2.00	1.30	2.50	2.00	4.90	2.00	1.50	.80	.90
8.....	.70	.90	.60	1.70	1.40	2.20	1.90	2.90	1.90	1.50	.80	.80
9.....	.80	1.00	.50	1.60	1.50	1.70	1.60	2.00	1.90	1.40	.80	.80
10.....	.80	1.00	.90	1.40	1.60	1.60	1.50	1.70	1.70	1.30	.70	1.50
11.....	1.00	.90	1.40	1.30	1.60	1.60	1.50	1.80	1.70	1.30	.70	1.30
12.....	3.00	1.00	1.30	1.20	1.50	1.50	1.40	1.90	1.60	1.20	.70	1.10
13.....	2.40	.90	1.00	1.10	1.20	1.40	1.30	4.30	1.60	2.40	.70	1.00
14.....	1.80	.70	.90	1.90	1.10	2.40	2.60	6.10	1.50	3.30	.60	2.00
15.....	1.40	.80	.80	1.80	1.10	4.60	1.40	4.20	1.50	1.90	.60	†10.00
16.....	1.10	.80	.80	1.50	1.00	3.80	1.60	5.20	1.60	1.60	.60	4.10
17.....	1.10	.80	.70	1.40	1.50	4.60	1.60	6.20	1.90	1.40	.60	3.00
18.....	.90	.80	.70	1.20	1.30	3.50	2.40	5.20	2.00	1.20	.50	1.90
19.....	.80	.70	.60	1.20	1.60	2.90	2.30	4.10	1.90	1.10	.50	1.70
20.....	.70	.70	.70	-----	1.40	2.40	2.40	3.60	1.70	1.20	.50	1.50
21.....	1.00	.60	1.10	6.10	1.30	3.00	1.40	3.90	1.50	1.10	.40	1.60
22.....	1.00	.60	1.00	3.70	16.70	3.80	1.30	3.10	1.40	1.00	.40	1.50
23.....	.90	*.70	.80	2.80	6.10	6.10	1.20	6.10	1.40	1.00	1.40	1.40
24.....	.90	-----	.70	2.60	3.90	4.60	1.10	3.80	1.20	1.00	1.40	2.50
25.....	.80	-----	1.00	2.40	3.10	3.00	1.00	3.00	1.10	1.00	1.20	2.30
26.....	.80	-----	4.00	2.30	2.70	2.80	1.00	2.80	1.10	.90	1.10	2.00
27.....	.70	-----	3.00	2.20	4.40	2.60	1.10	3.10	2.20	.90	1.00	1.70
28.....	.70	1.10	1.90	2.10	3.60	2.30	1.20	5.90	2.00	.90	1.00	1.90
29.....	.60	-----	1.50	2.00	3.30	2.50	1.00	3.70	5.10	.90	.90	†10.00
30.....	.70	-----	2.00	1.80	2.70	2.10	1.00	3.00	2.80	.80	.70	6.00
31.....	.80	-----	2.00	-----	2.40	-----	.90	3.10	-----	.80	-----	3.80

\*Frozen February 24 to 27.

†Estimated.

DAILY GAGE HEIGHT, IN FEET, OF NEW RIVER NEAR OLDTOWN, VA., FOR 1902.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	3.00	2.20	6.20	2.10	1.00	0.60	1.90	0.50	0.30	0.40	0.40	1.00
2.....	2.70	2.50	3.70	1.80	1.00	.70	1.60	.70	.30	.40	.40	1.10
3.....	2.00	2.30	2.80	1.70	1.00	.70	1.40	.70	.50	.60	.40	1.40
4.....	2.00	1.90	2.40	1.60	.90	.70	1.10	.70	1.00	.50	.40	1.50
5.....	1.70	1.90	2.00	1.90	.90	.60	1.00	.60	.80	.80	.40	1.50
6.....	1.90	1.70	1.90	1.70	1.00	.60	.80	.60	.80	1.00	.50	1.40
7.....	1.80	1.50	1.90	1.60	1.00	.60	.90	1.40	.40	.70	.60	1.20
8.....	1.70	1.40	1.80	1.90	1.10	.90	1.10	.80	.40	.60	.70	1.10
9.....	1.50	1.10	1.80	1.70	1.00	1.00	1.20	.70	1.00	.40	.60	.90
10.....	1.50	.90	2.00	1.60	.90	1.00	.80	.50	2.00	.40	.50	.90
11.....	1.40	1.00	1.90	1.50	.80	.90	.80	.50	.90	.60	.50	.90
12.....	1.30	1.20	1.70	1.50	.90	.90	.70	.40	.60	.90	.40	.80
13.....	1.10	1.20	1.90	1.40	.80	.60	.70	2.00	.50	1.00	.40	.80
14.....	1.10	1.10	1.60	1.40	.80	2.10	.80	1.10	.40	.90	.30	.90
15.....	1.00	1.00	1.50	1.50	1.00	1.90	1.00	.50	.40	.70	.30	.80
16.....	.40	1.10	1.90	1.50	1.10	3.10	.80	.70	.40	.50	.30	1.00
17.....	1.30	1.10	2.40	1.40	1.00	2.80	.80	.90	.40	.50	.30	1.60
18.....	1.20	1.20	2.10	1.30	1.00	1.70	.60	.80	.40	.40	.80	1.30
19.....	1.20	2.00	1.90	1.20	1.50	1.40	.60	.60	.40	.40	1.10	1.20
20.....	1.10	1.90	1.70	1.50	1.00	1.20	.60	.50	.40	.40	.70	1.00
21.....	1.00	2.20	1.60	1.50	1.10	1.10	.50	.50	.50	.40	.60	1.00
22.....	1.20	1.90	1.50	1.40	.90	1.00	.50	.60	.50	.20	.50	1.20
23.....	1.10	1.50	1.40	1.30	.90	.90	.60	.60	.40	.20	.50	1.10
24.....	1.10	1.40	1.40	1.20	1.00	.80	.50	.40	.40	.20	.50	1.00
25.....	1.20	3.60	1.30	1.20	1.00	.80	.50	.40	.50	.20	.60	.80
26.....	1.20	3.90	1.20	1.10	1.20	.90	.40	.40	.80	.20	1.00	.60
27.....	1.00	2.60	1.20	1.00	1.00	2.60	.40	.40	.60	.40	1.20	†1.00
28.....	2.00	*11.00	1.40	1.00	.90	3.90	.40	.40	.50	.90	1.00	-----
29.....	1.70	-----	1.90	1.00	.90	4.10	.50	.40	.50	1.10	.80	-----
30.....	1.90	-----	3.90	1.00	.70	2.20	.70	.30	.40	.70	.70	-----
31.....	3.00	-----	2.50	-----	.70	-----	.60	.30	-----	.50	-----	-----

\*Estimated. †Frozen December 28 to 31.

MEAN DAILY GAGE HEIGHT, IN FEET, OF NEW RIVER NEAR OLDTOWN, VA., FOR 1903.

Day.	Jan.	Feb.	Mar.	Day.	Jan.	Feb.	Mar.	Day.	Jan.	Feb.	Mar.
1.....	1.60	1.20	4.10	12.....	0.90	2.80	2.10	23.....	0.90	1.40	4.70
2.....	2.90	1.10	2.60	13.....	.90	2.40	2.00	24.....	.90	1.30	4.80
3.....	3.90	1.20	2.10	14.....	.90	1.90	1.80	25.....	.90	1.10	3.00
4.....	2.40	1.40	1.80	15.....	.90	1.60	1.60	26.....	1.00	1.10	2.40
5.....	1.90	3.00	1.60	16.....	.90	1.50	1.50	27.....	1.10	1.30	2.00
6.....	1.50	1.80	1.50	17.....	.90	5.40	1.50	28.....	1.30	2.90	1.60
7.....	1.30	1.50	1.50	18.....	.90	3.20	1.40	29.....	1.40	-----	5.60
8.....	1.10	1.90	1.60	19.....	.90	2.20	1.20	30.....	1.50	-----	3.10
9.....	.90	1.90	1.70	20.....	.90	2.10	1.20	31.....	1.30	-----	2.20
10.....	.90	1.80	1.80	21.....	.90	1.80	1.40				
11.....	.90	1.70	2.40	22.....	.90	1.50	1.70				

## NEW RIVER (NORTH FORK) AT WEAVERS FORD, N. C.

During the summer and autumn of 1900, and during a part of the same period in 1901, a special investigation of the hydrographic conditions of the Southern Appalachian region was made by the United States Geological Survey, and temporary stations were established on a number of the larger streams.

The station at Weaversford was established July 27, 1900, and was located about one-fourth of a mile distant from Weaversford post-office and near Dixon's Mill. The gage rod is 12.6 feet long and is nailed to the downstream vertical timber of the forebay of Dixon's Mill. The discharge measurements are made by wading at a comparatively shallow ford not on a public road, about 400 yards below the house of Mr. Dixon. The bed of the stream is rocky and gravelly and constant in form. The banks of the river are high, and are seldom overflowed.

The station was abandoned December 31, 1901.

## LIST OF DISCHARGE MEASUREMENTS OF NEW RIVER (NORTH FORK) AT WEAVERS FORD, N. C.

Date.	Hydrographer.	Gage Height (Feet).	Discharge (Second-feet).
1900.			
July 28	N. C. Curtis.....	0.60	536
Oct. 27	do.....	.90	708
1901.			
June 27	N. C. Curtis.....	1.40	1,377

DAILY GAGE HEIGHT, IN FEET, OF NEW RIVER (NORTH FORK) AT WEAVERSFORD, N. C., FOR  
1900 AND 1901.

1900. (Day)	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1			0.10	0.10	0.70	0.70	0.80
2			.10	.90	.80	.60	.90
3			.10	.90	.75	2.10	.90
4			.10	.90	.45	1.00	1.80
5				.90	.30	.85	1.20
6				.90	.70	.80	.50
7				.90		.70	.50
8				.90		.70	.70
9				1.00		.60	.70
10				1.00		.60	.70
11				1.00		.60	.70
12			.10	1.00		.60	.80
13			.10	.65		.70	.80
14			.30	.90	.90	.70	.90
15			.20	.75	.90	.80	.90
16			.20	.65	.90	.80	.70
17			.10	.55	.90	.90	.70
18			.10	.65	.90	.90	.70
19			.10	.75	1.00	.90	.70
20			.10	.80	1.00	.90	.80
21			.20	.80	1.00	.90	.80
22			.40	.90	1.10	1.00	.80
23			.60	1.00	7.30	1.00	.90
24			.40	.10	5.50	1.00	.90
25			.10	.30	1.70	1.00	.90
26			.10	.40	1.00	3.00	.90
27		1.00	.10	.60	.90	1.00	1.00
28		.50	.10	.80	1.00	2.00	1.00
29		.30	4.10	.90	.90	.50	1.00
30		.20	.10	.65	.90	.60	
31		.20	.10		.80		
1901.							
1		1.70	.40	1.80	.60	.20	.20
2		.90	.20	1.70	.50	.20	.20
3		.60	.10	1.30	.40	.20	.60
4		.80	.10	1.00	.40	.20	.40
5		.70	2.35	.80	.60	.20	.30
6		.60	5.75	.70	2.30	.20	.30
7		2.00	2.15	.60	1.00	.20	.30
8		.70	9.00	.50	.80	.20	.20
9		.50	7.00	.50	.60	.20	.30
10		.40	7.50	.70	.40	.20	.70
11		.40	5.90	.70	.40	.20	.40
12		.30	3.75	.60	.40	.20	.30
13		.40	3.00	.60	.50	.30	.30
14		.30	3.70	.60	.40	.30	2.00
15		.30	3.00	.60	.40	.20	7.60
16		.40	3.15	.50	.60	.20	1.50
17		1.20	3.40	.50	1.00	.20	1.00
18		1.50	3.60	.80	.70	.30	.80
19		.70	2.00	.50	.60	.30	.60
20		.60	2.60	.40	.30	.30	.60
21		.30	3.00	.60	.20	.30	.40
22		.20	2.60	.40	.20	.20	.40
23		.20	1.25	.60	.20	.20	.40
24		.20	3.00	.40	.20	.40	.30
25		.20	1.00	.40	.20	.40	.30
26		.70	1.50	.30	.20	.30	.60
27	1.00	.70	1.60	.30	.20	.30	1.50
28	1.00	.10	1.80	.70	.20	.30	1.60
29	.90	.10	1.80	.40	.20	.30	10.50
30	1.00	.10	1.20	1.20	.20	.30	4.40
31		.20	1.90		.20		3.40

RATING TABLE FOR NEW RIVER (NORTH FORK) AT WEAVERS FORD, N. C., FOR 1900 AND 1901.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
0.0	-----	1.6	1,745	3.2	4,705	4.8	7,665
.1	260	1.7	1,930	3.3	4,890	4.9	7,850
.2	300	1.8	2,115	3.4	5,075	5.0	8,035
.3	350	1.9	2,300	3.5	5,260	5.1	8,220
.4	400	2.0	2,485	3.6	5,445	5.2	8,405
.5	455	2.1	2,670	3.7	5,630	5.3	8,590
.6	515	2.2	2,855	3.8	5,815	5.4	8,775
.7	580	2.3	3,040	3.9	6,000	5.5	8,960
.8	650	2.4	3,225	4.0	6,185	5.6	9,145
.9	720	2.5	3,410	4.1	6,370	5.7	9,330
1.0	810	2.6	3,595	4.2	6,555	5.8	9,515
1.1	920	2.7	3,780	4.3	6,740	5.9	9,700
1.2	1,040	2.8	3,965	4.4	6,925	6.0	9,885
1.3	1,200	2.9	4,150	4.5	7,110		
1.4	1,375	3.0	4,335	4.6	7,295		
1.5	1,560	3.1	4,520	4.7	7,480		

ESTIMATED MONTHLY DISCHARGE OF NEW RIVER (NORTH FORK) AT WEAVERS FORD, N. C.

[Drainage area, 278 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maximum.	Minimum.	Mean.	Second-feet per Square Mile.	Depth in Inches.
1900.					
July*	-----	---	443	1.59	0.28
August†	-----	---	541	1.95	1.74
September	810	260	626	2.25	2.51
October‡	-----	---	1,571	5.65	5.05
November	4,335	455	901	3.24	3.61
December‡	-----	---	717	2.58	2.97
1901.					
June§	-----	---	788	2.83	.42
July	2,485	260	596	2.14	2.47
August	15,435	260	4,211	15.15	17.46
September	2,115	350	643	2.31	2.58
October	3,040	300	511	1.84	2.12
November	400	300	325	1.17	1.31
December	18,210	300	1,942	6.98	8.06

\*5 days. †24 days. ‡29 days. §June 27-30.

## NEW RIVER (SOUTH FORK) AT NEW RIVER, N. C.

This station was established July 28, 1900, and was located near New River Post-office and about 75 yards upstream from Warden's Store.

The gage was a wire cord running over a bolt driven into a locust tree and the stage of the water surface was read on a horizontal scale, divided into feet and tenths, by means of a pointer fastened to the wire.

The point of gaging was at a ford about 1 mile downstream from the gage. The measurements of discharge are made by wading.

The channel is straight, the banks seldom overflow, and the bed of the stream rocky and covered with cobbles and bowlders. This station was abandoned December 31, 1901.

## LIST OF DISCHARGE MEASUREMENTS OF NEW RIVER (SOUTH FORK) AT NEW RIVER, N. C.

Date.	Hydrographer.	Gage Height (Feet).	Discharge (Second-feet).
1900.			
July 28	N. C. Curtis	2.70	751
Oct. 28	do.	2.60	1,035
1901.			
June 27	N. C. Curtis	3.90	1,976

## DAILY GAGE HEIGHT, IN FEET, OF NEW RIVER (SOUTH FORK) AT NEW RIVER, N. C.

Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1900.							1900.						
1		2.45	2.30	2.30	2.60	2.70	17		2.20	2.80	2.25	2.40	2.60
2		2.35	2.25	2.30	2.60	2.70	18		2.20	2.40	2.20	2.40	2.60
3		2.30	2.20	2.45	3.50	2.70	19		2.20	2.40	2.20	2.40	2.60
4		2.30	2.20	2.80	3.80	3.95	20		2.20	2.30	2.20	2.40	2.60
5		2.30	2.20	2.75	3.30	3.70	21		2.20	2.30	2.20	2.35	2.60
6		2.30	2.20	2.70	2.80	3.20	22		2.30	2.30	2.20	2.30	2.60
7		2.30	2.20	2.55	2.65	2.85	23		2.30	2.30	7.90	2.30	2.70
8		2.30	2.20	2.50	2.60	2.80	24		2.30	2.30	6.70	2.30	2.60
9		2.30	2.20	2.45	2.60	2.80	25		2.30	2.30	3.75	2.70	2.60
10		2.30	2.20	2.40	2.60	2.75	26		2.25	2.30	3.05	5.20	2.60
11		2.30	2.20	2.40	2.60	2.70	27		2.20	2.30	2.90	3.60	2.60
12		2.30	2.15	2.35	2.55	2.70	28		2.20	2.30	2.70	3.05	2.60
13		2.35	2.10	2.30	2.50	2.60	29	2.65	2.50	2.30	2.60	2.95	2.60
14		2.40	2.55	2.30	2.50	2.60	30	2.50	2.45	2.30	2.60	2.80	2.60
15		2.35	2.60	2.30	2.45	2.60	31	2.50	2.35		2.60		2.80
16		2.30	3.70	2.30	2.40	2.60							



DAILY GAGE HEIGHT, IN FEET, OF NEW RIVER (SOUTH FORK) AT NEW RIVER, N. C., FOR 1901.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	2.75	2.55	2.60	3.05	3.40	-----	3.95	2.85	4.80	3.80	2.95	2.70
2.....	2.70	2.50	2.60	4.45	3.30	-----	3.70	2.80	4.30	3.70	2.90	2.70
3.....	2.70	2.55	2.55	5.65	3.30	-----	3.60	2.75	4.10	3.70	2.90	3.15
4.....	2.65	2.80	2.50	4.25	3.25	-----	3.70	2.70	4.05	3.50	2.90	3.15
5.....	2.60	2.70	2.50	3.70	3.30	-----	3.65	3.95	3.85	3.40	3.00	2.95
6.....	2.55	2.50	2.50	3.60	3.30	-----	4.05	9.47	3.70	3.30	2.95	2.85
7.....	2.50	2.55	2.50	3.55	3.20	-----	3.65	5.30	3.65	3.25	2.90	2.75
8.....	2.50	2.70	2.50	3.40	3.20	-----	3.55	4.00	3.60	3.20	2.90	2.70
9.....	2.50	3.05	2.50	3.10	3.55	-----	3.45	3.55	3.60	43.15	2.90	2.80
10.....	2.55	2.95	2.60	3.05	3.45	-----	3.30	3.35	3.60	1.10	2.90	3.80
11.....	3.20	2.80	3.15	3.00	3.65	-----	3.20	3.35	3.55	3.10	2.90	3.40
12.....	3.55	2.65	2.95	2.95	3.45	-----	3.20	4.65	3.55	3.10	2.90	3.00
13.....	3.50	2.60	2.70	3.05	3.20	-----	3.15	6.25	3.60	4.90	2.90	2.90
14.....	2.95	2.60	2.65	3.80	3.00	-----	3.20	5.60	3.60	4.20	2.85	5.90
15.....	2.90	2.60	2.60	3.40	3.00	-----	3.25	5.60	3.60	3.25	2.80	13.00
16.....	2.80	2.60	2.60	3.10	3.00	-----	3.40	5.35	3.60	3.10	2.80	5.40
17.....	2.80	2.60	2.60	3.05	3.00	-----	3.50	7.20	3.60	3.10	2.80	4.30
18.....	2.70	2.60	2.50	3.00	3.10	-----	3.50	6.15	3.75	3.10	2.80	3.95
19.....	2.70	2.60	2.50	4.70	3.25	-----	3.45	5.75	3.60	3.00	2.80	3.85
20.....	2.70	2.60	2.55	13.30	3.30	-----	2.95	4.70	3.55	3.00	2.80	3.55
21.....	2.70	2.55	3.00	6.65	8.00	-----	3.00	5.05	3.45	3.00	2.80	3.45
22.....	2.70	2.55	2.90	4.95	15.00	-----	2.90	4.85	3.40	3.00	2.80	3.35
23.....	2.70	2.50	2.65	4.55	-----	-----	2.90	5.00	3.40	3.00	3.50	3.25
24.....	2.70	2.55	2.60	4.45	-----	-----	2.85	5.25	3.30	3.00	3.20	3.25
25.....	2.65	2.75	2.85	4.25	-----	-----	2.80	4.45	3.30	3.00	2.95	3.45
26.....	2.55	2.70	5.20	4.05	-----	-----	2.80	5.05	3.25	3.00	2.80	3.55
27.....	2.65	2.60	5.00	3.75	-----	-----	2.80	4.60	3.15	3.00	2.80	3.60
28.....	2.60	2.55	3.70	3.70	-----	-----	2.80	5.00	3.40	3.00	2.80	3.70
29.....	2.65	-----	3.20	3.60	-----	-----	2.90	4.80	5.50	3.00	2.80	8.70
30.....	2.60	-----	3.40	3.55	-----	-----	2.90	4.55	4.20	3.00	2.75	6.20
31.....	2.60	-----	3.45	-----	-----	-----	2.90	5.00	-----	3.00	-----	4.80

RATING TABLE FOR NEW RIVER (SOUTH FORK) AT NEW RIVER, N. C., FOR 1900 AND 1901.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
2.2	240	4.0	2,090	5.8	4,070	10.0	8,690
2.4	440	4.2	2,310	6.0	4,290	11.0	9,790
2.6	640	4.4	2,530	6.2	4,510	12.0	10,890
2.8	840	4.6	2,750	6.4	4,730	13.0	11,990
3.0	1,040	4.8	2,970	6.6	4,950	14.0	13,090
3.2	1,240	5.0	3,190	6.8	5,170	15.0	14,190
3.4	1,440	5.2	3,410	7.0	5,390		
3.6	1,650	5.4	3,630	8.0	6,490		
3.8	1,870	5.6	3,850	9.0	7,590		

ESTIMATED MONTHLY DISCHARGE OF NEW RIVER, SOUTH FORK, AT NEW RIVER, N. C.  
[Drainage area, 327 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maximum.	Minimum.	Mean.	Second-feet per Square Mile.	Depth in Inches.
1900.					
July* . . . . .	-----	-----	360	1.90	0.20
August . . . . .	540	240	342	1.05	1.21
September . . . . .	1,760	200	369	1.19	1.33
October . . . . .	6,380	240	878	2.68	3.09
November . . . . .	3,410	340	620	2.51	2.80
December . . . . .	2,035	640	780	2.41	2.78
1901.					
January . . . . .	1,595	540	779	2.38	2.75
February . . . . .	1,090	540	677	2.07	2.16
March . . . . .	3,410	540	957	2.93	3.37
April . . . . .	12,320	990	2,275	6.96	8.88
May† . . . . .	-----	-----	2,123	6.49	5.31
June . . . . .	-----	-----	-----	-----	-----
July . . . . .	2,145	840	1,302	3.99	5.75
August . . . . .	9,000	740	2,650	8.13	9.37
September . . . . .	3,740	1,190	1,489	4.55	5.07
October . . . . .	3,080	1,040	1,305	3.99	4.60
November . . . . .	1,540	790	932	2.85	3.17
December . . . . .	11,990	740	2,187	6.69	7.71

\*Three days.      †May (1-22).

## TENNESSEE RIVER BASIN.

## DESCRIPTION OF BASIN.

Tennessee River is formed by the junction of the French Broad and the Holston, about 4 miles above Knoxville, Tenn. It flows southwestward, crossing into Alabama about 40 miles below Chattanooga, Tenn., and, after crossing the northern part of Alabama, again enters Tennessee in Harding County. It then flows northward, crossing Tennessee and Kentucky, and enters Ohio River at Paducah, about 40 miles above Cairo. Its principal tributary on the north is Clinch River, which enters it near Kingston, Roan County, Tenn. The principal tributaries on the south are Hiwassee and Little Tennessee rivers. The Hiwassee rises in the northern part of Georgia and flows across the western part of North Carolina into Tennessee, and thence to the Tennessee River, about 30 miles above Chattanooga. Its principal tributaries are the Ocoee and Nottely. Little Tennessee River rises in the northeast corner of Georgia, flows across the southwestern part of North Carolina, and enters the Tennessee near Loudon, Tenn. Its principal tributary is the Tuckasegee. French Broad River rises in the western part of North Carolina. Its principal tributaries are the Pigeon and the Nolichucky. Holston River rises in the western part of Virginia. Its principal tributary is Watauga River.

## MEASUREMENTS OF STREAM FLOW.

## HIWASSEE RIVER AT RELIANCE, TENN.

This station was established on August 17, 1900. It is located at the Atlanta, Knoxville and Northern Railroad bridge, near the ferry landing at Reliance, Tenn.

Above the station the channel makes a sharp bend to the east for a distance of 800 feet. Below the station the channel makes a sharp bend to the west for about 1,000 feet. At ordinary stages the river is about 350 feet wide at this point, and the section is a fairly good one. The water is held back by a ledge of rock below, and is rather sluggish at low stages. Both banks overflow, but all water passes beneath the bridge and its approaches.

Discharge measurements are made from the railroad bridge and from the wooden trestles on both banks. The railroad track is about 34 feet above low water. The initial point for soundings is the center of the bridge pin about 1 foot from the end of the bridge on the right bank, downstream side. Discharge measurements at low stages can be made at a ferry near Wetmore, 6 miles below.

The gage is a vertical rod 10 feet long, fastened to an oak tree on the right bank 150 feet above the railroad bridge and 40 feet below the ferry landing and a 5-foot section, reading from 10 to 15 feet, attached to a sycamore tree on the downstream side of the road leading to the ferry, about 400 feet from the river. The gage is read once each day by C. V. Higdon. Bench marks were established as follows: (1) A cut in a hickory tree on the right bank of the river about 75 feet upstream from the bridge; elevation, 5.82 feet. (2) The top of the downstream iron girder under the cross-ties at a point about 40 feet from the end of the bridge on the right bank; elevation, 23.90 feet. (3) The top of the cap-

stone of the right-bank pier on the upstream side of the bridge; elevation, 19.26 feet. (4) A copper plug set in a stone post flush with the surface of the ground at the south end of C. V. Higdon's house, under the south window. This house stands on the right bank, about 50 feet up from the foot of the hill, 600 feet north of the right-bank end of the bridge, and opposite a point on the river about 300 feet above the bridge; elevation of the bench mark, 27.16 feet. Elevations refer to the datum of the gage.

## DISCHARGE MEASUREMENTS OF HIWASSEE RIVER AT RELIANCE, TENN.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage (Height Feet).	Discharge (Second- feet).
1900.						
Aug. 17	Olin P. Hall.....	....	1,995	.56	1.12	1,123
Sept. 3	do.....	....	2,019	.57	1.16	1,159
Nov. 30	do.....	....	2,209	.90	1.72	1,985
Dec. 19	do.....	....	2,102	.69	1.42	1,442
1901.						
Feb. 18	Olin P. Hall.....	....	....	....	2.01	2,698
Feb. 27	M. R. Hall.....	....	2,182	.96	1.77	2,104
Apr. 2	Olin P. Hall.....	....	3,211	3.75	4.55	12,025
June 24	do.....	....	2,329	1.13	1.98	2,620
Aug. 21	do.....	....	2,693	3.06	3.74	8,229
Oct. 30	do.....	....	2,126	.72	1.43	1,522
1902.						
Apr. 23	Olin P. Hall.....	....	2,259	1.32	2.05	2,972
Aug. 11	do.....	....	1,837	.45	.86	832
Oct. 1	do.....	....	1,935	.64	1.28	1,236
Nov. 19	do.....	....	1,965	.70	1.37	1,372
1903.						
Mar. 23	O. P. Hall.....	....	4,390	....	7.60	24,527
May 15	M. R. Hall.....	....	1,970	....	1.90	2,335
July 25	O. P. Hall.....	....	1,996	....	1.40	1,440
Aug. 22	do.....	....	1,993	....	1.28	1,155
Oct. 7	do.....	....	1,808	....	.92	615
Dec. 8	do.....	....	1,785	....	.98	663
1904.						
Feb. 24	O. P. Hall.....	332	2,197	1.45	2.32	3,177
Feb. 25	do.....	331	2,145	1.23	2.10	2,632
Feb. 25	M. R. Hall.....	304	2,017	1.36	2.10	2,735
May 16	O. P. Hall.....	308	1,968	.82	1.64	1,607
Aug. 25	do.....	302	1,855	.55	1.30	1,012
Aug. 26	do.....	302	1,864	.53	1.28	994
Oct. 10	do.....	299	1,656	.25	.75	418
1905.						
Apr. 12	Olin P. Hall.....	318	2,103	1.12	1.98	2,347
June 19	do.....	311	1,927	.75	1.56	1,436
Oct. 6	do.....	299	1,780	.40	1.07	708
Oct. 7	do.....	301	1,794	.40	1.05	718
Dec. 30	M. R. Hall.....	320	2,049	1.29	2.13	2,634
1906.						
Feb. 13	O. P. Hall.....	317	1,990	....	1.88	2,090
Apr. 20	do.....	326	2,210	....	2.27	3,000
June 13	do.....	330	2,270	....	2.38	3,440
Nov. 2	do.....	319	2,040	....	1.92	2,240
1907.						
May 29	F. A. Murray.....	329	1,979	1.08	1.82	2,139
Oct. 9	Olin P. Hall.....	312	1,879	.90	1.58	1,684

DAILY GAGE HEIGHT, IN FEET, OF HIWASSEE RIVER AT RELIANCE, TENN., FOR 1900.

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....		1.40	1.05	1.30	1.60	17.....		2.00	1.00	1.20	1.50
2.....		1.30	1.00	1.20	1.50	18.....		1.60	1.00	1.10	1.50
3.....		1.20	1.00	1.80	1.50	19.....	1.10	1.40	.90	1.10	1.40
4.....		1.05	1.00	1.30	2.80	20.....	1.05	1.30	.90	1.20	1.50
5.....		1.00	1.00	1.40	3.00	21.....	1.05	1.20	1.90	1.30	2.80
6.....		1.10	1.00	1.50	2.40	22.....	1.05	1.20	1.00	1.40	2.80
7.....		1.05	1.00	1.40	2.00	23.....	1.10	1.30	1.30	1.30	2.10
8.....		1.00	1.30	1.40	2.00	24.....	1.50	1.30	4.00	1.50	2.40
9.....		1.00	1.50	1.30	1.90	25.....	1.40	1.20	2.00	1.70	2.30
10.....	.90		1.20	1.30	1.80	26.....	1.30	1.10	1.50	4.50	2.00
11.....	.90		1.10	1.40	1.70	27.....	1.30	1.10	1.60	3.60	1.90
12.....	.90		1.10	1.30	1.60	28.....	1.15	1.05	1.50	2.00	1.90
13.....	.90		1.20	1.30	1.60	29.....	1.10	1.05	1.50	1.80	2.00
14.....	1.00		1.40	1.30	1.60	30.....	1.10	1.05	1.40	1.70	1.90
15.....	3.60		1.10	1.20	1.50	31.....	1.10		1.30		2.40
16.....	3.50		1.00	1.20	1.50						

DAILY GAGE HEIGHT, IN FEET, OF HIWASSEE RIVER AT RELIANCE, TENN., FOR 1901.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	2.50	2.40	1.80	2.60	2.30	2.80	2.40	1.50	3.10	1.80	1.50	1.30
2.....	2.20	2.10	1.80	4.30	2.30	2.50	2.10	1.40	2.60	1.90	1.40	1.30
3.....	2.10	2.30	1.60	4.50	2.20	2.40	2.00	1.30	2.50	1.70	1.40	1.40
4.....	1.90	4.70	1.70	3.50	2.20	2.40	2.00	1.30	2.40	1.70	1.40	1.60
5.....	1.90	3.20	1.90	2.90	2.10	2.30	2.00	1.30	2.40	1.70	1.50	1.50
6.....	1.80	2.80	1.80	2.90	2.10	2.20	1.80	2.10	2.20	1.70	1.40	1.40
7.....	1.70	2.50	1.70	2.80	2.10	2.60	2.00	5.40	2.20	1.60	1.40	1.40
8.....	1.70	2.40	1.60	2.60	2.00	2.30	2.10	2.50	2.10	1.60	1.40	1.40
9.....	1.60	2.50	1.80	2.50	2.00	2.10	2.00	2.00	2.10	1.70	1.30	1.50
10.....	1.70	2.70	3.00	2.40	2.10	2.10	1.80	1.80	2.00	1.70	1.40	1.70
11.....	7.00	2.50	3.30	2.30	2.00	2.00	1.70	1.80	2.00	1.60	1.30	2.00
12.....	8.50	2.40	2.50	2.30	2.00	2.10	1.60	1.90	2.00	1.50	1.40	1.70
13.....	4.50	2.30	2.20	2.30	1.90	2.10	1.60	2.30	2.40	1.80	1.70	1.60
14.....	3.50	2.30	2.10	3.40	1.90	2.70	1.50	4.80	2.10	1.90	1.50	6.00
15.....	3.00	2.30	2.00	2.80	1.90	2.50	1.60	5.00	2.00	1.70	1.40	8.80
16.....	2.80	2.20	1.90	2.50	1.80	3.50	1.60	6.00	1.90	1.60	1.30	3.50
17.....	2.50	2.00	1.90	2.40	1.80	2.90	1.70	4.50	2.80	1.50	1.40	2.70
18.....	2.40	2.00	1.80	2.40	1.80	2.60	1.60	5.50	3.80	1.60	1.30	2.40
19.....	2.10	2.00	1.80	5.40	2.50	2.40	1.70	5.50	2.80	1.60	1.30	2.10
20.....	2.10	1.90	1.70	7.30	5.10	2.50	2.20	4.20	2.40	1.50	1.40	2.10
21.....	2.00	1.90	1.90	4.40	4.80	2.30	1.80	3.60	2.30	1.50	1.40	2.00
22.....	2.10	1.80	2.00	3.40	9.90	2.20	1.60	5.00	2.10	1.40	1.30	1.90
23.....	2.00	1.80	1.80	3.20	4.50	2.10	1.60	9.10	2.10	1.50	1.40	2.10
24.....	2.10	1.80	1.90	3.00	3.50	2.00	1.50	4.90	2.00	1.50	1.60	2.50
25.....	2.40	1.70	2.10	2.80	3.10	2.80	1.40	3.70	2.00	1.50	1.50	2.10
26.....	2.10	1.40	9.30	2.70	2.90	2.10	1.50	3.00	2.00	1.40	1.40	2.20
27.....	2.10	1.80	5.60	2.60	2.80	2.10	1.70	3.00	1.90	1.40	1.40	3.00
28.....	2.50	1.70	3.80	2.50	2.60	1.90	1.50	3.00	1.90	1.40	1.40	3.00
29.....	2.00		3.10	2.40	2.60	2.20	1.50	3.30	2.00	1.50	1.30	7.70
30.....	2.10		2.90	2.40	2.50	2.20	1.50	3.20	1.90	1.40	1.30	8.00
31.....	2.70		2.90		3.00		1.60	2.90		1.30		5.40

## DAILY GAGE HEIGHT, IN FEET, OF HIWASSEE RIVER AT RELIANCE, TENN., FOR 1902-1903.

1902.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	3.40	4.50	6.30	3.00	2.10	1.50	1.30	1.00	0.90	1.20	0.90	1.50
2.....	3.00	5.70	3.30	2.80	2.40	1.40	1.30	1.10	.80	1.20	.90	1.60
3.....	2.80	4.30	3.60	2.70	2.10	1.40	1.30	1.00	.80	1.10	.90	3.00
4.....	2.60	3.30	3.20	2.70	2.00	1.50	1.30	1.20	.90	1.00	.90	2.50
5.....	2.40	2.90	3.60	2.60	2.00	1.40	1.40	1.00	1.20	1.00	.90	2.20
6.....	2.40	2.70	3.30	2.50	1.90	1.40	1.30	1.00	1.00	1.00	.90	2.00
7.....	2.30	2.50	3.00	2.60	1.90	1.40	1.10	1.00	.90	1.10	1.50	1.70
8.....	2.20	2.40	2.90	3.20	1.90	1.50	1.20	.90	.80	1.00	1.20	1.60
9.....	2.20	2.30	2.40	2.80	1.90	1.40	1.10	.80	.80	.90	1.00	1.50
10.....	2.10	2.20	2.10	2.60	1.80	1.60	1.10	.80	.90	.90	1.00	1.40
11.....	2.00	2.20	2.90	2.50	1.80	1.50	1.20	.80	1.20	1.00	1.00	1.50
12.....	2.00	2.10	2.80	2.40	1.70	1.40	1.30	.80	1.00	1.20	1.00	1.40
13.....	1.90	2.10	2.70	2.60	1.80	1.40	1.90	.80	.90	1.50	1.00	1.40
14.....	1.90	2.00	2.70	2.30	1.90	1.30	1.40	.80	1.20	1.40	1.00	1.40
15.....	1.90	2.00	2.60	2.40	1.90	1.30	1.90	.80	1.00	1.40	1.00	1.30
16.....	1.90	2.10	2.90	2.30	1.90	1.40	1.50	.90	.90	1.20	1.00	1.60
17.....	1.90	2.10	3.80	2.30	1.80	1.30	1.20	.80	.90	1.10	.90	2.60
18.....	1.80	2.00	3.00	2.30	1.80	1.30	1.10	.80	.80	1.00	1.40	2.10
19.....	2.00	1.90	2.80	2.20	1.80	1.40	1.10	.80	.80	1.00	1.50	1.80
20.....	2.10	1.90	2.70	2.20	1.80	1.40	1.10	.80	1.50	1.00	1.20	1.70
21.....	2.10	2.10	2.60	2.20	1.70	1.30	1.10	.80	1.20	1.00	1.10	1.80
22.....	2.50	2.70	2.60	2.20	1.70	1.60	1.10	.80	1.10	1.00	1.10	3.10
23.....	2.10	2.50	2.50	2.10	1.60	1.30	1.00	.80	1.00	.90	1.10	2.30
24.....	2.00	2.30	2.40	2.10	1.60	1.20	1.00	.70	1.00	.90	1.00	2.00
25.....	1.90	2.40	2.40	2.00	1.60	1.20	1.00	.70	1.10	.90	1.70	1.90
26.....	1.90	2.50	2.30	2.00	1.70	1.40	1.00	.70	1.70	.90	3.00	1.70
27.....	2.00	2.40	2.30	2.00	1.70	1.70	.90	.90	1.50	.90	2.00	1.60
28.....	2.60	10.00	2.40	1.90	1.60	1.40	.90	1.20	1.30	.90	1.70	1.60
29.....	2.50	.....	5.50	2.00	1.50	1.40	1.00	1.20	1.30	1.00	1.50	1.60
30.....	2.50	.....	4.50	2.10	1.50	1.30	1.10	1.10	1.10	.90	1.50	1.90
31.....	3.10	.....	3.50	.....	1.50	.....	1.10	.90	.....	.90	.....	1.80
1903.												
1.....	1.80	1.60	6.70	3.60	2.30	2.50	1.70	1.60	1.10	0.90	1.10	1.00
2.....	1.70	1.60	4.00	3.20	2.20	3.40	1.60	2.10	1.10	.90	1.00	1.00
3.....	2.30	1.70	3.40	3.10	2.20	2.50	1.60	1.70	1.10	.90	1.10	1.00
4.....	3.30	2.90	3.00	3.40	2.20	2.30	1.80	1.60	1.10	.90	1.00	1.00
5.....	2.10	4.00	2.80	3.00	2.10	2.70	1.60	1.60	1.10	.90	1.20	1.00
6.....	2.00	2.80	3.10	2.90	2.10	3.60	1.60	1.60	1.10	.90	1.30	1.00
7.....	1.90	2.60	2.90	2.70	2.10	2.80	1.60	1.60	1.00	.90	1.20	1.00
8.....	1.80	4.30	*4.30	4.70	2.00	2.40	1.70	1.50	1.00	1.20	1.10	1.00
9.....	1.70	3.50	4.40	3.90	2.00	2.20	1.80	1.40	1.10	1.60	1.10	1.00
10.....	1.60	2.90	4.00	3.10	2.00	3.40	1.70	1.40	1.20	1.10	1.00	1.00
11.....	1.70	3.40	4.00	2.90	1.90	2.60	1.80	1.30	1.10	1.00	1.00	1.00
12.....	2.70	4.70	4.70	2.80	1.90	2.30	1.70	1.40	1.10	1.00	1.20	1.00
13.....	2.00	3.30	3.70	3.20	1.90	2.10	2.80	1.30	1.00	1.00	1.30	1.00
14.....	1.90	2.80	3.40	5.20	1.90	2.00	3.00	1.40	1.00	1.00	1.10	1.10
15.....	1.80	2.60	3.10	4.00	1.90	1.90	2.20	1.30	1.00	1.90	1.10	1.20
16.....	1.70	2.70	2.90	3.50	1.90	1.80	1.90	1.50	1.30	1.00	1.10	1.10
17.....	1.70	7.70	2.80	3.00	1.80	1.80	2.00	1.60	1.50	1.00	1.10	1.00
18.....	1.70	4.10	2.60	2.80	1.80	1.70	1.90	1.50	1.20	1.10	2.10	1.00
19.....	1.60	3.30	2.50	2.90	1.80	1.70	1.70	1.40	1.10	1.00	1.50	.90
20.....	1.50	2.90	2.50	2.90	1.70	1.70	1.60	1.30	1.10	1.00	1.20	1.20
21.....	1.50	2.70	2.60	2.90	1.70	1.70	1.60	1.50	1.00	1.10	1.20	1.50
22.....	1.50	2.50	2.90	2.80	1.80	1.70	1.50	1.30	1.00	1.00	1.10	1.40
23.....	1.50	2.40	8.10	2.60	1.70	1.80	1.50	1.20	1.00	1.00	1.10	1.20
24.....	1.50	2.20	6.00	2.50	1.70	1.60	1.50	1.30	1.00	.90	1.10	1.10
25.....	1.50	2.20	4.10	2.50	1.60	1.60	1.40	1.20	1.00	.90	1.10	1.10
26.....	1.50	2.10	3.50	2.60	1.60	1.90	1.40	1.20	1.00	.90	1.10	1.20
27.....	1.50	2.00	3.20	2.50	1.60	2.20	1.40	1.10	1.00	.90	1.00	1.50
28.....	1.60	9.30	3.00	2.30	1.60	2.00	1.30	1.10	1.00	.90	1.00	1.30
29.....	1.60	.....	2.90	2.30	1.70	1.90	1.40	1.10	.90	.90	1.00	1.20
30.....	1.70	.....	5.00	2.20	1.80	1.80	1.50	1.20	.90	1.00	1.00	1.10
31.....	1.60	.....	4.60	.....	2.50	.....	1.80	1.10	.....	1.10	.....	1.10

## DAILY GAGE HEIGHT, IN FEET, OF HIWASSEE RIVER AT RELIANCE, TENN., FOR 1904-1905.

1904.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	1.00	1.30	1.80	2.40	1.65	1.90	1.50	1.10	1.10	0.80	0.75	1.20
2.....	1.00	1.40	1.80	2.00	1.60	1.60	1.25	1.50	1.20	.75	.75	1.30
3.....	1.10	1.40	1.70	1.90	1.60	1.45	1.15	1.25	1.05	.80	.75	1.60
4.....	1.30	1.30	1.70	1.85	1.30	1.45	1.10	1.50	1.00	.80	.85	1.50
5.....	1.40	1.30	1.70	1.80	1.20	1.40	1.10	1.15	1.45	.80	1.00	1.30
6.....	1.30	1.20	1.60	1.80	1.60	1.25	1.55	2.50	1.40	.78	1.00	2.50
7.....	1.40	1.20	2.20	2.00	1.55	1.30	1.20	1.60	1.15	.75	.90	1.70
8.....	1.10	2.10	3.20	2.10	1.30	1.85	1.15	1.65	1.05	.72	.85	1.40
9.....	1.10	2.00	2.50	2.80	3.20	1.55	1.10	1.45	1.00	.75	.85	1.30
10.....	1.00	1.70	2.10	2.30	2.30	1.40	1.40	1.50	.90	.75	.80	1.20
11.....	1.10	1.60	2.10	2.30	2.05	1.25	1.20	1.60	1.00	.75	.80	1.25
12.....	1.20	1.60	2.10	2.00	1.90	1.30	1.40	1.60	.95	.75	.80	1.20
13.....	1.30	1.50	1.90	2.00	1.80	1.35	1.50	1.45	.95	.75	.95	1.15
14.....	1.30	1.40	2.20	1.85	1.75	1.20	1.30	1.45	.92	.72	1.00	1.10
15.....	1.30	1.50	2.50	1.80	1.75	1.20	1.10	1.40	.90	.72	1.05	1.10
16.....	1.20	1.80	2.20	1.85	1.65	1.15	.90	2.10	.90	.72	.90	1.10
17.....	1.60	1.50	2.00	1.75	1.60	1.15	1.10	1.50	.85	.72	.85	1.10
18.....	1.80	1.50	1.90	1.75	1.60	1.15	1.12	1.35	.85	.72	.85	1.15
19.....	1.50	1.60	1.85	1.70	1.55	1.15	1.20	1.35	.80	.70	.85	1.15
20.....	1.40	2.30	1.80	1.65	1.50	1.15	.90	1.35	.80	.70	.85	1.15
21.....	1.30	2.00	1.80	1.70	1.50	1.50	.94	1.40	.90	.70	.85	1.05
22.....	1.70	2.70	3.10	1.70	1.45	1.40	1.40	1.25	.95	.70	.95	1.00
23.....	3.60	3.10	4.30	1.60	1.40	1.40	1.50	1.25	.85	.70	1.00	1.00
24.....	2.30	2.50	4.30	1.60	1.40	1.20	1.20	1.10	.90	.70	1.20	1.05
25.....	1.90	2.10	3.30	1.60	1.40	1.15	1.18	1.35	.80	.70	1.00	1.30
26.....	1.60	1.90	2.80	1.70	1.35	1.20	1.22	1.30	.80	.70	.90	1.35
27.....	1.50	1.80	2.80	2.20	1.35	1.30	1.15	1.10	.80	.75	.90	1.40
28.....	1.40	1.80	2.60	1.85	1.30	1.50	1.10	1.50	.80	.75	.85	2.50
29.....	1.40	1.80	2.40	1.80	1.30	1.60	1.40	1.30	.85	.75	.85	2.60
30.....	1.40	-----	2.20	1.75	1.30	1.70	1.15	1.20	.85	.75	1.20	1.70
31.....	1.30	-----	2.40	-----	1.60	-----	1.15	1.10	-----	.80	-----	1.50
1905.												
1.....	1.40	1.40	2.05	1.80	2.50	1.90	2.20	1.30	1.20	0.95	1.10	1.35
2.....	1.40	1.40	2.00	1.75	2.30	1.85	2.00	1.25	1.35	1.00	1.10	1.25
3.....	1.50	1.35	1.90	1.70	2.20	1.85	1.80	1.25	1.40	1.05	1.10	5.50
4.....	1.75	1.50	1.85	1.70	2.15	1.70	1.55	1.20	1.60	1.00	1.10	3.50
5.....	1.50	1.90	1.85	1.80	2.00	1.65	1.45	1.20	1.25	1.55	1.10	2.30
6.....	1.50	2.15	1.80	1.90	1.95	1.65	1.60	1.20	1.20	1.15	1.10	1.95
7.....	2.40	2.10	1.75	1.85	2.30	1.60	1.75	1.20	1.25	1.05	1.10	1.75
8.....	1.90	2.15	1.75	1.80	2.20	1.55	1.50	1.50	1.15	1.00	1.15	1.75
9.....	1.65	7.20	1.85	1.80	2.40	1.55	1.60	1.60	1.10	1.00	1.10	4.70
10.....	1.55	3.90	2.50	1.95	2.20	1.50	1.40	1.45	1.20	1.00	1.10	3.70
11.....	1.60	2.85	2.50	1.80	2.00	1.45	1.50	2.05	1.15	1.80	1.15	2.80
12.....	2.90	2.40	2.20	2.00	1.90	1.45	2.30	2.30	1.20	2.20	1.10	2.40
13.....	5.00	2.80	2.15	2.20	1.90	1.50	3.30	2.00	1.30	1.45	1.05	2.10
14.....	5.50	3.20	2.00	2.00	1.95	1.45	2.40	1.80	1.20	1.30	1.05	1.90
15.....	3.10	2.70	1.95	1.90	1.80	1.45	2.05	1.80	1.10	1.20	1.05	2.10
16.....	2.10	2.40	1.90	2.00	3.20	1.45	2.05	1.90	1.10	1.20	1.05	2.20
17.....	1.90	2.25	1.80	1.90	3.00	1.60	1.80	1.40	1.10	1.25	1.05	2.00
18.....	1.80	2.10	1.80	1.80	2.50	1.55	1.90	1.90	1.05	1.15	1.05	1.90
19.....	1.75	2.00	1.90	1.75	2.20	1.55	1.80	1.60	1.05	1.20	1.05	1.80
20.....	1.65	2.70	1.80	1.75	2.00	1.75	1.75	1.55	1.15	1.15	1.15	1.80
21.....	1.65	6.30	2.10	1.70	2.00	1.75	1.65	1.40	1.15	1.15	1.35	2.60
22.....	1.60	3.90	2.90	1.80	2.00	2.00	1.70	1.30	1.10	1.10	1.25	2.70
23.....	1.55	3.20	2.30	1.70	2.30	2.00	1.60	1.30	1.00	1.10	1.15	2.50
24.....	1.50	2.40	2.10	1.60	3.70	2.00	1.45	2.00	1.00	1.10	1.10	3.20
25.....	1.45	2.60	2.10	1.60	2.70	1.70	1.35	2.00	1.00	1.10	1.10	2.60
26.....	1.50	2.25	2.00	1.65	2.40	1.55	1.45	1.60	1.00	1.15	1.20	2.30
27.....	1.45	2.25	1.95	2.15	2.30	1.50	1.35	1.50	1.00	1.30	1.20	2.20
28.....	1.35	2.15	1.90	2.30	2.10	1.70	1.35	1.50	1.00	1.25	1.15	2.00
29.....	1.40	-----	1.80	3.50	2.00	1.50	1.45	1.35	.95	1.25	1.15	2.00
30.....	1.50	-----	1.85	2.80	1.95	1.70	1.45	1.30	.95	1.15	1.30	2.00
31.....	1.45	-----	1.85	-----	2.00	-----	1.40	1.35	-----	1.15	-----	1.90

## DAILY GAGE HEIGHT, IN FEET, OF HIWASSEE RIVER AT RELIANCE, TENN., FOR 1906-1907.

1906.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	1.85	2.35	1.70	3.10	2.05	1.50	1.70	2.90	3.00	5.40	1.95	2.30
2.....	1.80	2.25	1.70	2.25	2.00	1.75	1.60	3.10	2.60	3.90	1.95	2.25
3.....	1.95	2.20	2.10	2.50	1.95	2.00	1.60	2.85	2.40	4.50	1.90	2.25
4.....	6.30	2.10	2.80	2.40	2.10	1.80	1.75	2.75	2.35	4.20	1.90	2.25
5.....	3.60	2.05	2.30	2.30	2.00	1.90	1.75	2.50	2.25	4.20	1.90	2.30
6.....	2.90	2.05	2.10	2.20	1.95	2.15	1.60	2.30	2.65	3.40	1.90	2.10
7.....	2.50	2.00	2.00	2.15	2.00	1.90	1.55	2.70	2.25	4.00	1.85	2.50
8.....	2.30	2.00	2.05	2.20	2.05	1.75	1.65	2.30	2.25	3.40	1.85	2.20
9.....	2.70	1.95	2.15	2.50	1.95	1.65	1.65	2.15	2.25	3.00	1.80	2.15
10.....	2.35	1.90	2.00	3.40	1.90	1.50	1.75	2.00	2.25	2.80	1.80	2.10
11.....	2.20	1.85	1.90	2.45	1.85	1.50	1.55	1.95	2.20	2.35	1.85	3.20
12.....	2.30	1.85	1.85	2.50	1.80	1.50	1.65	1.90	2.65	2.25	2.00	2.30
13.....	2.35	1.90	1.85	2.30	1.80	2.05	1.65	1.85	2.25	2.00	1.85	2.40
14.....	2.30	1.85	1.85	2.25	1.75	2.80	2.30	1.85	2.15	2.40	1.80	2.30
15.....	2.20	1.85	3.00	3.65	1.70	2.50	5.00	2.25	2.00	2.30	1.85	2.25
16.....	2.20	1.80	3.60	3.10	1.65	3.60	3.20	2.30	1.95	2.30	1.85	2.20
17.....	2.15	1.75	2.85	2.60	1.65	2.70	2.90	2.00	1.85	2.25	1.90	2.25
18.....	2.10	1.75	2.45	2.50	1.60	2.30	5.40	2.00	1.85	2.40	2.70	3.90
19.....	2.35	1.75	2.45	2.40	1.60	2.10	3.70	2.00	3.50	3.40	15.20	3.00
20.....	2.15	1.70	4.00	2.20	1.55	2.00	3.10	2.35	2.90	2.35	7.00	2.85
21.....	2.05	1.80	3.20	2.25	1.55	1.90	3.00	2.60	2.50	2.40	4.10	2.75
22.....	2.40	2.00	2.60	2.20	1.55	1.80	4.10	2.15	2.85	2.30	3.50	2.65
23.....	6.90	1.85	2.50	2.10	1.55	1.70	3.30	2.30	2.55	2.25	3.10	2.55
24.....	4.00	1.80	2.40	2.05	1.50	1.75	2.75	2.25	2.85	2.20	2.90	2.40
25.....	3.20	1.75	2.35	2.00	1.45	2.50	2.50	2.30	2.50	2.20	2.70	2.30
26.....	2.25	1.75	2.35	2.00	1.60	2.20	2.40	2.25	2.40	2.15	2.60	2.35
27.....	2.90	1.80	2.20	2.10	2.40	2.00	2.40	2.00	2.25	2.10	2.50	2.20
28.....	2.70	1.80	2.30	2.20	1.90	1.90	2.10	2.10	2.25	2.00	2.40	2.40
29.....	2.60	.....	2.30	2.30	1.75	1.85	2.00	2.05	2.25	2.05	2.35	4.20
30.....	2.50	.....	2.90	2.05	1.65	1.70	2.40	3.80	5.20	2.00	2.30	3.30
31.....	2.40	.....	3.20	.....	1.55	.....	2.35	3.90	.....	2.00	.....	3.80
1907.												
1.....	3.70	2.30	2.50	2.30	2.05	3.15	1.85	1.75	1.30	1.90	1.30	1.80
2.....	3.20	4.60	3.00	2.00	2.00	2.90	1.80	1.60	1.35	1.70	1.35	1.70
3.....	2.90	3.20	3.60	1.90	1.95	2.50	1.75	1.55	1.20	1.65	1.25	1.65
4.....	2.80	2.75	2.90	1.95	2.05	2.30	1.80	1.45	1.40	1.65	1.55	1.65
5.....	2.60	4.00	2.65	1.85	2.00	2.15	1.85	1.45	1.40	1.60	1.40	1.60
6.....	2.60	3.30	2.50	2.10	2.05	2.00	1.70	1.50	1.30	1.60	1.30	1.60
7.....	2.46	2.80	2.40	2.20	2.25	1.90	1.60	1.55	1.25	1.50	1.35	1.55
8.....	2.40	2.60	2.50	2.00	2.60	2.05	1.50	1.50	1.25	1.50	1.40	1.55
9.....	2.35	2.55	2.55	2.05	2.20	3.10	1.50	1.50	1.30	1.60	1.35	1.50
10.....	2.30	2.40	2.35	2.00	2.00	2.30	1.50	1.40	1.40	1.60	1.60	2.60
11.....	2.25	2.35	2.65	1.90	2.70	2.20	1.40	1.35	1.75	1.40	2.40	2.40
12.....	2.25	2.25	2.40	1.85	2.70	2.10	1.70	1.35	1.40	1.40	1.85	2.05
13.....	2.20	2.20	2.35	2.00	2.30	1.90	3.10	1.55	1.35	1.30	1.70	1.90
14.....	2.15	2.15	2.35	1.90	2.15	2.20	2.30	1.50	1.35	1.35	1.60	2.15
15.....	2.10	2.15	2.60	1.80	2.10	2.00	2.00	1.70	1.20	1.35	1.55	2.70
16.....	2.10	2.05	2.35	1.85	2.50	1.90	1.90	2.70	1.20	1.35	1.55	2.40
17.....	2.10	2.05	2.25	2.05	2.15	1.80	1.85	1.80	1.20	1.35	1.45	2.15
18.....	2.10	2.00	2.20	1.95	2.10	1.80	1.75	2.00	1.20	1.30	1.40	2.05
19.....	2.05	2.00	2.15	2.15	1.95	1.90	1.85	2.40	1.20	1.30	1.75	2.00
20.....	2.15	2.10	2.10	2.35	2.00	1.80	1.80	1.80	1.15	1.30	1.60	1.90
21.....	2.40	2.00	2.05	2.05	1.90	1.85	1.70	1.60	1.15	1.25	1.85	1.85
22.....	2.05	2.00	2.00	2.00	1.80	1.85	1.55	1.70	1.15	1.30	2.00	2.05
23.....	2.00	2.05	2.00	2.15	1.80	1.85	1.50	2.00	3.00	1.30	1.80	2.35
24.....	2.00	2.00	1.95	2.95	1.80	2.00	1.50	2.00	3.10	1.30	4.40	2.70
25.....	2.00	2.10	1.95	2.50	1.85	2.05	1.45	1.80	2.00	1.35	3.00	2.40
26.....	2.00	2.15	2.00	2.30	2.00	2.10	1.50	1.60	1.70	1.30	2.50	2.25
27.....	2.00	2.80	1.95	2.25	2.70	2.05	1.50	1.50	1.55	1.35	2.20	2.15
28.....	1.95	2.40	1.90	2.20	2.00	1.95	1.50	1.40	1.70	1.65	2.00	2.05
29.....	1.90	.....	1.90	2.10	1.85	1.80	1.50	1.45	1.75	1.35	1.90	2.05
30.....	1.90	.....	1.85	2.10	1.80	2.00	3.90	1.50	2.25	1.25	1.85	2.60
31.....	1.90	.....	1.95	.....	1.90	.....	2.10	1.35	.....	1.25	.....	3.80



DAILY GAGE HEIGHT, IN FEET, OF HIWASSEE RIVER AT RELIANCE, TENN., FOR 1908.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1.....	3.90	2.95	2.30	2.45	2.55	1.85	1.35	1.30	1.25	1.05
2.....	2.60	2.95	2.30	2.40	2.35	1.75	1.30	1.25	1.25	1.00
3.....	2.40	2.40	2.50	2.35	2.25	1.75	1.40	1.20	1.20	1.00
4.....	2.40	2.35	2.40	2.25	2.20	2.45	2.10	1.20	1.20	1.00
5.....	4.40	2.25	2.40	2.30	2.25	2.50	2.55	1.50	1.25	1.00
6.....	3.20	2.30	2.35	2.45	2.30	2.10	2.10	1.55	2.50	1.00
7.....	2.90	2.30	2.30	2.40	2.50	2.00	1.95	1.80	1.50	1.00
8.....	2.75	2.20	2.25	2.25	2.30	1.80	2.00	1.60	1.45	1.00
9.....	2.50	2.15	2.20	2.20	2.50	1.75	1.90	1.65	1.30	1.05
10.....	2.35	2.25	2.20	2.15	2.35	1.70	2.20	1.75	1.25	1.35
11.....	2.25	2.95	2.15	2.10	2.25	1.75	2.10	1.40	1.20	1.65
12.....	5.40	2.60	3.10	2.10	2.30	1.80	1.90	1.30	1.20	1.25
13.....	3.90	2.70	2.95	2.05	2.10	1.65	1.70	1.30	1.20	1.15
14.....	2.30	2.85	2.65	2.00	2.05	1.80	1.65	1.25	1.15	1.15
15.....	2.80	4.20	2.50	2.10	2.00	2.05	1.55	1.25	1.15	1.15
16.....	2.70	4.70	2.40	3.00	2.00	1.80	1.50	1.20	1.15	1.10
17.....	2.90	3.60	2.35	2.55	2.00	1.65	1.60	1.20	1.15	1.05
18.....	2.65	3.00	2.25	2.50	2.00	1.60	1.45	1.15	1.10	1.05
19.....	2.55	2.85	2.25	3.00	2.40	1.60	1.60	1.20	1.10	1.05
20.....	2.40	2.85	2.35	2.70	2.20	1.60	1.60	1.50	1.10	1.00
21.....	2.35	2.60	3.60	2.50	2.05	1.60	1.40	1.40	1.05	1.05
22.....	2.30	2.50	2.90	2.35	1.95	1.60	1.40	1.80	1.05	1.05
23.....	2.25	2.40	2.40	2.25	1.90	1.60	1.30	2.20	1.05	1.05
24.....	2.15	2.30	7.70	2.20	1.95	1.50	1.55	1.80	1.05	1.05
25.....	2.05	2.50	4.30	2.40	1.95	1.50	1.45	1.95	1.05	1.55
26.....	2.05	2.50	3.50	4.00	2.00	1.45	1.30	1.80	1.05	1.30
27.....	2.20	2.50	3.10	3.00	1.95	1.40	1.30	1.75	1.00	1.20
28.....	2.25	2.40	2.90	2.55	1.90	1.40	1.25	1.60	1.05	1.25
29.....	2.20	2.30	2.70	2.25	2.00	1.35	1.35	1.35	1.00	1.35
30.....	2.10		2.65	2.45	1.90	1.35	1.70	1.35	1.00	2.05
31.....	2.05		2.50		2.00		1.35	1.35		1.75

RATING TABLE FOR HIWASSEE RIVER AT RELIANCE, TENN., FOR 1900.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.0	1,030	2.0	2,450	3.0	4,200	4.0	5,950
1.2	1,180	2.2	2,800	3.2	4,550	4.2	6,300
1.4	1,415	2.4	3,150	3.4	4,900	4.4	6,650
1.6	1,750	2.6	3,500	3.6	5,250		
1.8	2,100	2.8	3,850	3.8	5,600		

RATING TABLE FOR HIWASSEE RIVER AT RELIANCE, TENN., FOR 1901 AND 1902.

0.8	790	2.4	3,620	4.0	9,300	5.6	16,380
1.0	970	2.6	4,190	4.2	10,190	5.8	17,840
1.2	1,205	2.8	4,800	4.4	11,120	6.0	18,800
1.4	1,485	3.0	5,450	4.6	12,060	6.5	21,200
1.6	1,805	3.2	6,140	4.8	13,040	7.0	23,600
1.8	2,170	3.4	6,870	5.0	14,000	8.0	28,400
2.0	2,600	3.6	7,640	5.2	14,960		
2.2	3,090	3.8	8,450	5.4	15,920		

RATING TABLE FOR HIWASSEE RIVER AT RELIANCE, TENN., FOR 1903.

Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).
0.9	590	3.1	5,790	5.3	14,890	7.5	24,350
1.0	735	3.2	6,140	5.4	15,320	7.6	24,780
1.1	885	3.3	6,500	5.5	15,750	7.7	25,210
1.2	1,040	3.4	6,870	5.6	16,180	7.8	25,640
1.3	1,200	3.5	7,250	5.7	16,610	7.9	26,070
1.4	1,370	3.6	7,640	5.8	17,040	8.0	26,500
1.5	1,550	3.7	8,040	5.9	17,470	8.1	26,930
1.6	1,740	3.8	8,450	6.0	17,900	8.2	27,360
1.7	1,940	3.9	8,870	6.1	18,330	8.3	27,790
1.8	2,150	4.0	9,300	6.2	18,760	8.4	28,220
1.9	2,370	4.1	9,730	6.3	19,190	8.5	28,650
2.0	2,600	4.2	10,160	6.4	19,620	8.6	29,080
2.1	2,840	4.3	10,590	6.5	20,050	8.7	29,510
2.2	3,090	4.4	11,020	6.6	20,480	8.8	29,940
2.3	3,350	4.5	11,450	6.7	20,910	8.9	30,370
2.4	3,620	4.6	11,880	6.8	21,340	9.0	30,800
2.5	3,900	4.7	12,310	6.9	21,770	9.1	31,230
2.6	4,190	4.8	12,740	7.0	22,200	9.2	31,660
2.7	4,490	4.9	13,170	7.1	22,630	9.3	32,090
2.8	4,800	5.0	13,600	7.2	23,060		
2.9	5,120	5.1	14,030	7.3	23,490		
3.0	5,450	5.2	14,460	7.4	23,920		

RATING TABLE FOR HIWASSEE RIVER AT RELIANCE, TENN., 1904-1906.

0.70	380	1.70	1,725	2.80	4,090	3.50	7,300
0.80	400	1.80	1,940	2.70	4,410	3.60	7,690
0.90	550	1.90	2,165	2.80	4,745	3.70	8,080
1.00	655	2.00	2,400	2.90	5,090	3.80	8,475
1.10	770	2.10	2,650	3.00	5,445	3.90	8,875
1.20	895	2.20	2,915	3.10	5,805	4.00	9,280
1.30	1,030	2.30	3,190	3.20	6,170	4.20	10,090
1.40	1,180	2.40	3,480	3.30	6,540	4.40	10,910
1.50	1,345	2.50	3,780	3.40	6,915	4.60	11,730
1.60	1,525						

NOTE.—The above table is based on 12 discharge measurements made during 1904-5, and 1 measurement made in 1901. It is well defined between gage heights 0.7 foot and 2.3 feet. Above gage height 4.2 feet the rating curve is a tangent, the difference being 410 per tenth.

## ESTIMATED MONTHLY DISCHARGE OF HIWASSEE RIVER AT RELIANCE, TENN.

[Drainage area, 1,180 square miles.]

Month.	Discharge in Second-feet.			Total in Acre-feet.	Run-off.	
	Maxi-mum.	Mini-mum.	Mean.		Second-feet per Square Mile.	Depth in Inches.
1900.						
August 1 to 31 .....	-----	-----	1,173	34,899	1.00	0.56
September.....	5,250	970	1,461	86,936	1.24	1.38
October.....	5,950	970	1,431	87,989	1.21	1.40
November.....	6,825	1,100	1,749	104,073	1.48	1.65
December.....	4,200	1,415	2,360	145,111	2.00	2.31
1901.						
January.....	30,800	1,805	5,015	-----	4.25	4.91
February.....	12,560	1,485	3,448	-----	2.92	3.04
March.....	34,640	1,805	4,595	-----	3.89	4.49
April.....	25,040	3,350	6,282	-----	5.32	5.93
May.....	37,520	2,170	5,468	-----	4.63	5.35
June.....	7,250	2,375	3,576	-----	3.03	3.38
July.....	3,620	1,485	2,116	-----	1.79	2.06
August.....	33,680	1,340	8,190	-----	6.94	8.00
September.....	5,790	2,375	3,348	-----	2.84	3.17
October.....	2,375	1,340	1,796	-----	1.52	1.75
November.....	1,805	1,340	1,494	-----	1.27	1.42
December.....	32,240	1,340	6,257	-----	5.30	6.12
The year.....	37,520	1,340	4,299	-----	3.68	49.62

## RATING TABLE FOR HIWASSEE RIVER AT RELIANCE, TENN., FOR 1907.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.10	930	2.00	2,570	2.90	5,140	3.80	8,475
1.20	1,070	2.10	2,820	3.00	5,470	3.90	8,875
1.30	1,220	2.20	3,080	3.10	5,820	4.00	9,280
1.40	1,380	2.30	3,350	3.20	6,180	4.10	9,685
1.50	1,550	2.40	3,630	3.30	6,550	4.20	10,090
1.60	1,730	2.50	3,920	3.40	6,920	4.30	10,500
1.70	1,920	2.60	4,210	3.50	7,300	4.40	10,910
1.80	2,120	2.70	4,510	3.60	7,690	4.50	11,320
1.90	2,340	2.80	4,820	3.70	8,080	4.60	11,730

The above table is applicable only for open channel conditions. It is based upon 3 discharge measurements made during 1907, and the form of the 1904-1906 discharge curve. It is well defined.

ESTIMATED MONTHLY DISCHARGE OF HIWASSEE RIVER AT RELIANCE, TENN.  
[Drainage area, 1,150 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maxi- mum.	Mini- mum.	Mean.	Second- feet per Square Mile.	Depth in Inches.
1902.					
January	6,870	2,170	3,330	2.81	3.24
February	36,000	2,375	5,729	4.86	5.06
March	20,240	2,540	6,070	5.14	5.92
April	6,140	2,375	3,634	3.06	3.44
May	3,620	1,640	2,205	1.87	2.16
June	1,960	1,205	1,491	1.26	1.41
July	2,375	870	1,230	1.05	1.21
August	1,205	700	875	.74	.85
September	1,960	790	1,054	.90	.99
October	1,640	870	1,034	.88	1.01
November	5,450	970	1,351	1.14	1.37
December	5,790	1,340	2,388	2.02	2.33
The year	36,000	700	2,532	2.14	28.99
1903.					
January	6,500	1,550	2,202	1.87	2.16
February	32,000	1,740	6,901	5.95	6.09
March	26,930	3,900	8,003	7.29	8.40
April	14,460	3,090	5,861	4.97	5.55
May	3,900	1,740	2,402	2.04	2.35
June	7,640	1,740	3,203	2.72	3.03
July	5,450	1,200	2,066	1.75	2.02
August	2,840	895	1,393	1.18	1.36
September	1,550	590	943	.71	.79
October	2,370	590	789	.67	.77
November	2,840	735	979	.83	.93
December	1,550	590	893	.76	.88
The year	32,090	590	3,011	2.55	34.33
1904.					
January	7,690	655	1,402	1.19	1.37
February	5,805	895	1,962	1.66	1.79
March	10,500	1,525	3,563	3.02	3.48
April	4,745	1,525	2,217	1.88	2.10
May	6,170	895	1,635	1.39	1.60
June	2,165	833	1,169	.991	1.11
July	1,435	550	930	.788	.908
August	3,780	770	1,280	1.08	1.24
September	1,263	460	625	.530	.591
October	460	380	412	.349	.402
November	895	420	562	.476	.531
December	4,090	655	1,281	1.09	1.26
The year	10,500	380	1,420	1.20	16.38
1905.					
January	15,440	1,105	2,680	2.27	2.62
February	22,700	1,105	4,886	4.14	4.31
March	5,090	1,832	2,446	2.07	2.39
April	7,300	1,525	2,320	1.97	2.20
May	8,080	1,940	3,174	2.69	3.10
June	2,400	1,262	1,640	1.39	1.55
July	6,540	1,105	1,912	1.62	1.87
August	3,190	895	1,504	1.27	1.46
September	1,525	602	832	.705	.787
October	2,915	602	976	.827	.953
November	1,105	712	803	.681	.760
December	15,440	962	3,846	3.26	3.76
The year	22,700	602	2,352	1.91	25.77

## MONTHLY DISCHARGE OF HIWASSEE RIVER AT RELIANCE, TENN.—Continued.

[Drainage area, 1,180 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maximum.	Minimum.	Mean.	Second-feet per Square Mile.	Depth in Inches.
1906.					
January.....	21,200	1,940	4,810	4.08	4.70
February.....	3,330	1,720	2,200	1.86	1.94
March.....	9,280	1,720	3,680	3.12	3.60
April.....	7,880	2,400	3,580	3.03	3.38
May.....	3,480	1,260	1,940	1.64	1.89
June.....	7,690	1,340	2,540	2.15	2.40
July.....	15,000	1,430	4,090	3.47	4.00
August.....	8,890	2,050	3,540	3.00	3.46
September.....	14,200	2,050	3,970	3.36	3.75
October.....	15,000	2,400	4,990	4.23	4.88
November.....	55,200	1,940	5,580	4.73	5.28
December.....	10,100	2,650	4,160	3.53	4.07
The year.....	55,200	1,260	3,760	3.18	43.35
1907.					
January.....	8,080	2,340	3,390	2.87	3.31
February.....	11,700	2,570	4,000	3.39	3.53
March.....	7,690	2,230	3,470	2.94	3.39
April.....	5,300	2,120	2,830	2.40	2.68
May.....	4,510	2,120	2,870	2.43	2.80
June.....	6,000	2,120	2,920	2.47	2.76
July.....	8,880	1,380	2,290	1.94	2.24
August.....	4,510	1,300	1,890	1.60	1.84
September.....	5,820	1,000	1,740	1.47	1.64
October.....	2,340	1,140	1,440	1.22	1.41
November.....	10,900	1,140	2,350	1.99	2.22
December.....	8,480	1,550	2,950	2.50	2.88
The year.....	11,700	1,000	2,680	2.27	30.70

NOTE.—Values for 1906 are excellent.

## HIWASSEE RIVER AT MURPHY, N. C.

This station was established July 26, 1896. It is located at the highway bridge, Murphy, N. C., about 80 feet above the Atlanta, Knoxville and Northern Railroad bridge and one-half mile above the mouth of Valley River.

The channel is straight for about 500 feet above and below the station. The right bank is high and rocky and will not overflow. The left bank will overflow for a short distance around the abutment. The bed of the stream is rocky and rough, and makes soundings uncertain. The bed is permanent and the flow is rapid.

Discharge measurements are made from the sidewalk on the upstream side of the single-span highway bridge. The bridge is 195 feet long, supported by stone abutments. The initial point for soundings is the end of the iron hand rail on the right bank, upstream side of the bridge.

A standard chain gage is fastened to the bridge members above the downstream end of the first iron floor beam from the right bank in the space between the bridge floor and the lower chords; length of chain, 30.80 feet. The gage is read once each day by William Mingus. Bench

marks were established as follows: (1) The downstream side of the top of the stone pier at the right bank; elevation, 22.55 feet. (2) The top of the downstream end of the first iron floor beam from the right end of the bridge; elevation, 25.05 feet. (3) A cut with large nail on a large white-oak tree in the grounds of the Atlanta, Knoxville and Northern Railroad station, on the left side of the street leading from the highway bridge to the town and 325 feet from the end of the bridge; elevation, 31.57 feet. Elevations refer to the datum of the gage.

## DISCHARGE MEASUREMENTS OF HIWASSEE RIVER AT MURPHY, N. C.

Date.	Hydrographer.	Gage Height (Feet).	Discharge (Second-feet).
1896.			
June 23	E. W. Myers.....	3.82	366
Aug. 10	....do.....	3.95	382
Sept. 22	....do.....	4.01	517
1897.			
Aug. 20	E. W. Myers.....	5.33	528
Oct. 14	....do.....	4.76	267
Oct. 29	A. P. Davis.....	4.71	253
1898.			
Jan. 21	E. W. Myers.....	6.05	1,170
Sept. 8	....do.....	6.80	1,620
1899.			
Feb. 28	E. W. Myers.....	7.50	2,150
June 23	....do.....	5.17	400
June 23	....do.....	5.30	436
Sept. 28	....do.....	4.93	304
Sept. 28	....do.....	5.00	345
Dec. 7	....do.....	5.10	317
Dec. 29	....do.....	5.50	613
1900.			
Feb. 11	E. W. Myers.....	6.10	1,534
Feb. 14	....do.....	7.95	4,567
Apr. 29	....do.....	6.10	1,466
May 26	....do.....	5.52	755
June 29	....do.....	7.10	3,405
July 8	....do.....	5.90	1,155
Sept. 9	....do.....	5.05	345
Nov. 18	....do.....	5.20	443
Dec. 13	....do.....	5.53	762
Dec. 13	....do.....	5.45	698
Dec. 28	....do.....	5.70	865

## DAILY GAGE HEIGHT, IN FEET, OF HIWASSEE RIVER AT MURPHY, N. C., FOR 1896.

Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	3.72	4.02	3.65	3.74	3.66	5.20	17.....	4.48	3.78	3.60	3.65	4.50	4.05
2.....	3.70	4.02	3.61	3.68	3.70	4.70	18.....	4.54	3.74	3.60	3.56	3.95	4.00
3.....	3.75	4.11	3.62	3.65	3.72	4.52	19.....	4.35	3.70	3.58	3.50	3.91	4.00
4.....	4.00	3.95	3.61	3.60	4.90	4.52	20.....	4.28	3.68	3.56	3.60	3.90	4.00
5.....	3.90	3.90	3.61	3.62	4.10	4.20	21.....	4.32	3.70	3.56	3.60	3.90	4.00
6.....	4.62	3.90	3.90	3.55	3.90	4.20	22.....	4.60	3.70	3.62	3.56	3.85	4.00
7.....	4.98	3.95	3.66	3.60	3.00	4.15	23.....	5.10	3.65	3.85	3.60	3.80	3.95
8.....	6.72	3.90	3.62	3.51	3.90	4.10	24.....	4.61	3.90	3.60	3.90	3.80	3.95
9.....	6.95	3.86	3.60	3.60	3.82	4.30	25.....	4.40	3.80	3.60	3.70	3.80	3.95
10.....	5.24	4.00	3.60	3.65	3.80	4.10	26.....	4.30	3.72	3.60	3.62	3.84	3.90
11.....	4.75	3.90	3.60	3.65	3.76	4.10	27.....	4.30	3.72	3.60	3.62	4.00	3.90
12.....	4.82	3.81	3.67	3.65	7.53	4.10	28.....	4.25	3.70	3.65	3.65	4.00	3.90
13.....	4.77	3.81	3.56	3.72	5.40	4.05	29.....	4.12	3.70	3.60	3.74	5.03	3.90
14.....	4.65	3.72	3.58	3.65	4.53	4.02	30.....	4.01	3.65	4.20	3.80	6.10	3.90
15.....	4.42	3.75	3.80	3.65	4.30	4.10	31.....	4.02	3.65	.....	3.82	.....	3.90
16.....	4.55	3.92	3.62	3.60	4.12	4.05							

## DAILY GAGE HEIGHT, IN FEET, OF HIWASSEE RIVER AT MURPHY, N. C., FOR 1897.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	3.90	4.80	4.60	5.40	4.80	4.18	3.90	4.20	.....	.....	5.00	5.02
2.....	3.90	5.50	4.50	5.50	4.70	4.15	3.90	4.32	.....	.....	5.40	5.00
3.....	3.90	4.90	4.55	5.38	4.65	4.12	3.90	4.20	.....	.....	5.10	5.10
4.....	3.90	4.62	4.70	6.26	4.60	4.10	3.90	4.10	.....	.....	5.02	5.45
5.....	4.12	4.60	4.60	8.20	4.55	4.30	4.15	4.35	.....	.....	5.00	6.10
6.....	4.02	5.15	9.20	6.12	4.62	4.12	4.00	4.20	.....	.....	5.00	5.50
7.....	4.00	5.40	6.50	5.75	4.50	4.10	4.02	4.20	.....	.....	4.95	5.30
8.....	4.00	5.12	5.65	5.50	4.50	4.10	4.10	.....	.....	.....	5.00	5.20
9.....	3.92	5.10	5.40	6.10	4.50	4.22	4.10	.....	.....	.....	4.98	5.12
10.....	3.92	4.85	5.62	5.35	4.45	4.10	4.25	.....	.....	.....	5.00	5.10
11.....	4.00	4.85	5.50	5.30	4.52	4.02	4.15	.....	.....	.....	5.00	5.10
12.....	3.90	4.82	9.90	5.15	4.40	4.05	4.00	.....	.....	.....	4.95	5.00
13.....	3.92	4.82	6.85	5.05	5.00	4.05	3.98	.....	.....	.....	4.95	5.02
14.....	4.40	4.12	6.70	5.05	4.80	4.00	3.90	.....	.....	.....	5.00	6.20
15.....	4.60	4.70	6.12	5.60	4.60	4.00	3.85	.....	.....	.....	5.00	5.55
16.....	4.15	4.60	7.65	5.05	4.50	4.10	3.90	.....	.....	.....	5.00	5.30
17.....	4.55	.....	6.30	5.00	4.50	4.03	4.50	.....	.....	.....	4.95	5.28
18.....	4.40	.....	6.00	4.90	4.42	4.10	4.05	.....	.....	.....	4.95	5.20
19.....	4.40	.....	7.05	4.80	4.40	4.20	5.72	.....	.....	.....	4.95	5.40
20.....	5.10	.....	6.80	4.80	4.32	4.15	5.00	.....	.....	5.00	4.95	6.00
21.....	4.70	4.80	6.10	4.70	4.36	4.05	4.50	.....	.....	4.75	4.95	7.35
22.....	4.52	4.50	5.80	4.70	4.35	4.00	4.85	.....	.....	4.75	4.95	6.85
23.....	4.40	7.92	5.55	4.70	4.30	4.00	4.34	.....	.....	4.70	4.90	6.15
24.....	4.40	5.50	5.40	4.70	4.26	4.00	4.20	.....	.....	4.70	4.90	5.80
25.....	4.40	5.10	5.30	4.65	4.25	4.00	10.85	.....	.....	4.70	5.00	5.50
26.....	4.20	4.97	5.15	4.70	4.22	4.00	6.20	.....	.....	4.65	4.98	5.85
27.....	4.30	4.70	5.10	4.63	4.20	3.90	5.20	.....	.....	4.66	5.00	5.60
28.....	4.10	4.64	5.00	4.60	4.20	3.90	4.72	.....	.....	4.70	5.05	5.50
29.....	4.15	.....	4.90	4.60	4.20	4.30	4.52	.....	.....	4.72	5.00	5.40
30.....	4.15	.....	5.00	4.68	4.20	4.00	4.40	.....	.....	4.90	5.10	5.40
31.....	4.15	.....	4.90	.....	4.20	.....	4.25	.....	.....	4.87	.....	5.30

## DAILY GAGE HEIGHT, IN FEET, OF HIWASSEE RIVER AT MURPHY, N. C., FOR 1898-1899.

1898.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	5.30	5.60	5.22	7.00	5.80	5.12	4.95	5.82	5.40	5.60	5.85	6.00
2.....	5.20	5.45	5.20	6.50	5.80	5.12	4.95	5.60	12.05	5.80	5.85	5.90
3.....	5.10	5.62	5.32	6.21	5.70	5.10	4.90	5.82	13.97	5.50	5.80	5.85
4.....	5.30	5.50	5.30	6.10	5.65	5.10	4.90	9.80	10.10	14.40	5.80	5.90
5.....	5.25	5.50	5.21	8.75	5.65	5.10	5.50	9.35	9.75	11.60	5.80	6.10
6.....	5.30	5.42	5.20	7.00	5.51	5.20	5.20	6.75	7.50	8.30	6.10	6.10
7.....	5.30	5.40	5.20	6.55	5.60	5.10	5.10	6.50	7.10	7.30	5.85	6.10
8.....	5.30	5.40	5.20	6.30	5.60	5.10	5.31	7.02	6.85	7.00	5.80	6.00
9.....	5.20	5.40	5.20	6.11	5.60	5.10	5.10	6.80	6.60	6.70	5.80	5.95
10.....	5.25	5.40	5.20	6.05	5.50	5.10	5.30	8.30	6.60	6.50	5.72	5.90
11.....	5.30	5.40	5.20	6.10	5.50	5.05	5.10	10.00	6.30	6.40	5.90	5.90
12.....	6.00	5.30	5.20	6.00	5.50	5.00	5.00	7.50	6.20	6.32	5.85	5.85
13.....	5.85	5.30	5.20	5.90	5.40	5.00	4.91	7.15	6.12	6.20	5.80	5.80
14.....	5.80	5.30	5.30	5.95	5.40	5.01	5.90	6.81	6.05	6.20	5.90	5.75
15.....	5.60	5.30	5.35	5.95	5.40	5.10	6.12	6.40	6.00	6.05	5.85	5.70
16.....	5.80	5.25	5.32	5.85	5.50	5.15	5.70	6.20	5.90	6.00	5.85	5.70
17.....	5.70	5.25	5.40	5.81	5.40	5.50	5.50	6.20	6.00	6.00	5.85	5.70
18.....	5.60	5.22	5.40	5.80	5.40	5.45	5.30	6.30	5.80	9.20	6.00	5.70
19.....	5.60	5.30	5.40	5.75	5.35	5.20	5.21	6.25	5.70	6.70	6.70	5.70
20.....	5.90	5.25	5.40	5.85	5.30	5.15	5.15	6.10	5.70	6.40	6.40	6.00
21.....	6.10	5.35	5.36	5.70	5.30	5.10	5.01	6.10	5.65	6.23	6.20	5.70
22.....	5.90	5.30	5.35	5.70	5.30	5.10	5.30	5.90	5.70	6.30	6.10	5.70
23.....	6.00	5.30	5.30	5.65	5.35	5.05	5.40	5.75	6.05	6.20	6.50	6.10
24.....	5.78	5.27	5.25	6.20	5.60	5.02	5.60	5.70	5.80	6.10	6.25	6.00
25.....	7.75	5.30	5.40	6.10	5.32	5.05	6.00	5.65	5.70	6.10	6.10	5.90
26.....	7.20	5.22	5.40	5.95	5.25	5.00	5.90	5.80	5.70	6.10	6.10	5.80
27.....	6.50	5.22	5.30	6.20	5.25	5.05	5.60	5.70	5.65	6.05	6.00	5.80
28.....	6.18	5.25	5.30	6.10	5.21	5.01	6.20	5.70	5.60	6.00	6.00	5.75
29.....	6.00		11.10	6.00	5.20	5.00	5.80	5.60	5.60	6.00	6.20	5.70
30.....	5.82		9.40	5.90	5.20	4.95	5.65	5.60	5.60	5.95	6.00	5.70
31.....	5.71		7.70		5.10		6.20	5.60		5.90		5.90
1899.												
1.....	5.80	5.60	6.90	6.80	5.85	5.30		5.30	5.40	4.90	4.85	5.10
2.....	5.70	5.70	6.60	6.60	5.82	5.30		5.20	5.25	4.80	4.90	5.35
3.....	5.70	5.70	6.70	6.50	5.80	5.30		5.20	5.50	4.85	4.90	5.10
4.....	5.65	14.00	6.32	7.20	5.80	5.25		5.15	5.30	4.75	4.90	5.10
5.....	5.60	9.60	7.40	6.55	6.10	5.25		5.12	5.20	4.80	4.90	5.10
6.....	5.70	9.45	6.75	6.50	5.80	5.25		5.20	5.10	4.90	4.90	5.02
7.....	6.30	9.90	6.50	6.55	5.85	5.10		5.20	5.10	4.90	4.90	5.00
8.....	6.00	7.85	6.40	6.70	5.70	5.10		5.20	5.15	5.70	4.90	5.10
9.....	5.90	7.20	6.40	6.60	5.70	5.20	5.20	5.12	5.05	5.15	4.90	5.05
10.....	5.80	6.75	6.30	6.50	5.70	5.15	5.10	5.15	5.00	5.00	4.90	5.10
11.....	5.80	6.60	6.20	6.40	5.62	5.10	5.10	5.15	5.20	5.02	4.90	5.10
12.....	5.80	6.55	6.10	6.30	5.62	5.82	5.05	5.10	5.10	5.00	4.85	9.10
13.....	5.70	6.30	6.10	6.20	5.60	5.80	5.00	5.10	5.00	4.90	4.85	6.30
14.....	5.70	6.40	6.75	6.20	5.55	5.50	5.00	5.05	5.00	4.80	4.90	5.82
15.....	5.75	6.40	10.80	6.10	5.60	5.35	5.00	5.20	5.00	5.00	4.90	5.70
16.....	5.75	6.30	8.75	6.10	5.50	5.25	5.00	5.32	4.90	5.00	4.90	5.50
17.....	5.75	6.25	7.50	6.05	5.50	5.30	5.10	5.20	5.00	5.00	4.90	5.40
18.....	5.70	6.25	7.10	6.00	5.50	5.20	5.30	5.10	5.00	4.95	4.90	5.40
19.....	5.70	6.00	18.40	6.00	5.60	5.20	5.20	5.00	5.00	5.10	4.85	5.30
20.....	5.70	6.10	8.70	6.00	5.50	5.15	5.10	5.00	5.10	5.00	4.85	5.50
21.....	5.70	6.10	7.60	6.00	5.45	5.10	5.30	5.00	5.00	5.00	4.90	5.40
22.....	5.60	6.10	7.20	5.90	5.40	5.10	5.30	5.00	5.00	4.90	4.90	5.35
23.....	5.60	6.00	8.15	5.90	5.40	5.10	5.30	5.00	5.00	4.90	5.40	5.30
24.....	5.52	5.92	7.00	5.90	5.42	4.85	5.20	5.00	5.00	4.90	5.12	6.30
25.....	5.65	6.10	6.80	6.70	5.40	4.95	5.20	5.10	5.00	4.90	5.10	5.70
26.....	5.60	6.00	6.60	6.10	5.40	5.05	6.80	5.05	5.00	4.90	5.75	5.60
27.....	5.60	9.10	6.52	6.00	5.35	5.00	5.75	5.25	5.02	4.90	5.40	5.50
28.....	5.60	7.30	6.50	6.00	5.35	5.00	5.90	5.45	5.00	5.00	5.30	5.55
29.....	5.50		6.90	5.90	5.32	5.00		5.10	5.00	5.10	5.20	5.50
30.....	5.50		6.70	5.90	5.32	5.00		5.10	4.88	4.90	5.10	5.35
31.....	5.90		7.80		5.30			5.70		5.00		5.40



## DAILY GAGE HEIGHT, IN FEET, OF HIWASSEE RIVER AT MURPHY, N. C., FOR 1900-1901.

1900.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	5.50	5.12	7.00	5.90	6.10	5.40	6.80	5.80	5.35	5.00	5.20	5.40
2.....	5.20	5.30	6.50	5.90	6.00	5.40	6.60	5.40	5.20	4.90	5.25	5.45
3.....	5.51	5.35	6.25	5.90	6.00	5.60	7.00	5.40	5.15	5.00	6.20	5.40
4.....	5.30	5.40	6.10	6.70	5.90	5.80	6.40	5.40	5.10	5.10	5.60	7.20
5.....	5.30	5.60	6.00	6.10	5.90	5.50	6.20	5.30	5.20	5.10	5.40	6.40
6.....	5.20	5.40	6.00	6.05	5.80	6.10	6.00	5.30	5.15	5.05	5.35	6.00
7.....	5.20	5.40	7.00	6.00	5.70	6.00	5.90	5.30	5.10	5.00	5.35	5.80
8.....	5.20	5.40	7.50	5.90	5.70	6.10	5.80	5.20	5.05	5.30	5.30	5.75
9.....	5.20	6.72	7.40	5.85	5.70	6.10	6.20	5.20	5.05	5.10	5.25	5.60
10.....	5.20	6.02	6.90	5.80	5.70	6.30	5.70	5.20	5.00	5.05	5.25	5.60
11.....	5.30	6.10	6.60	6.10	5.70	6.10	5.70	5.20	5.00	5.00	5.20	5.50
12.....	6.30	6.10	6.40	6.30	5.65	6.10	5.80	5.20	5.00	4.90	5.25	5.50
13.....	5.80	12.60	6.30	6.10	5.60	6.60	5.80	5.20	5.00	5.30	5.20	5.45
14.....	5.60	7.70	6.12	6.00	5.60	6.10	5.70	5.20	5.05	5.10	5.25	5.45
15.....	5.60	7.15	6.05	6.00	5.60	5.80	5.60	5.20	7.00	5.00	5.20	5.40
16.....	5.50	6.50	6.30	5.90	5.50	5.80	5.60	5.10	6.45	5.00	5.15	5.40
17.....	5.40	6.20	6.00	5.80	5.40	6.20	5.60	5.30	5.70	4.90	5.20	5.40
18.....	5.45	5.90	6.00	6.20	5.50	6.00	5.60	5.20	5.45	4.80	5.15	5.30
19.....	5.90	5.90	6.85	6.70	5.70	6.30	5.50	5.10	5.35	5.00	5.20	5.30
20.....	6.60	5.80	7.40	6.40	5.50	6.10	5.50	5.10	5.35	4.90	5.15	5.80
21.....	6.20	6.00	6.90	7.10	5.40	5.90	5.50	5.10	5.25	4.90	5.20	6.70
22.....	5.90	6.40	6.60	6.80	5.40	5.80	5.60	5.10	5.00	5.00	5.30	5.90
23.....	5.80	6.15	6.40	6.70	5.40	6.30	5.70	5.30	5.40	4.90	5.20	5.80
24.....	5.65	6.00	6.35	6.50	5.60	6.60	5.60	5.90	5.20	7.10	5.15	6.00
25.....	5.60	6.00	6.40	6.55	5.50	6.50	5.40	5.30	5.20	6.00	5.30	5.80
26.....	5.60	6.00	6.40	6.55	5.60	7.00	5.50	5.40	5.20	5.70	6.70	5.70
27.....	5.50	5.90	6.30	6.30	5.50	7.20	5.70	5.20	5.15	5.60	6.00	5.65
28.....	5.40	5.85	6.30	6.20	5.50	7.10	5.90	5.15	5.15	5.40	5.70	5.60
29.....	5.40	.....	6.05	6.20	5.40	7.00	5.70	5.15	5.10	5.30	5.60	5.70
30.....	5.40	.....	6.10	6.10	5.40	6.80	5.80	5.15	5.05	5.20	5.50	.....
31.....	5.50	.....	6.00	.....	5.40	.....	5.60	5.15	.....	5.25	.....	.....
1901.												
1.....	6.00	6.05	5.60	6.35	6.15	6.35	6.00	5.30	6.70	5.60	5.25	5.20
2.....	5.90	5.95	5.60	7.65	6.10	6.20	5.90	5.25	6.40	5.60	5.25	5.20
3.....	5.80	5.90	5.55	7.60	6.05	6.10	5.65	5.20	6.25	5.60	5.25	5.30
4.....	5.70	7.55	5.55	7.10	6.00	6.05	5.60	5.20	6.20	5.50	5.30	5.35
5.....	5.60	6.75	5.70	6.75	6.00	6.00	5.55	6.20	6.15	5.50	5.30	5.20
6.....	5.60	6.40	5.60	6.75	6.05	5.95	5.70	7.65	6.05	5.50	5.30	5.25
7.....	5.60	6.25	5.55	6.50	5.95	6.10	6.55	7.00	6.00	5.45	5.25	5.20
8.....	5.50	6.15	5.55	6.40	5.85	5.90	5.75	6.05	5.90	5.40	5.25	5.25
9.....	5.50	6.95	5.55	6.25	5.85	5.85	5.55	5.75	5.85	5.45	5.25	5.25
10.....	5.50	6.50	5.60	6.20	5.85	5.80	5.50	5.60	5.80	5.40	5.25	6.15
11.....	8.80	6.40	6.50	6.10	5.80	5.80	5.45	5.85	6.00	5.40	5.25	5.55
12.....	9.20	6.30	6.10	6.10	5.75	5.95	5.45	6.55	5.80	5.40	5.20	5.40
13.....	7.50	6.25	5.95	6.15	5.75	5.85	5.40	5.75	6.00	6.20	5.40	5.40
14.....	6.85	6.15	5.85	6.55	5.70	6.50	5.40	7.95	5.80	5.50	5.30	6.30
15.....	6.50	6.05	5.75	6.35	5.65	6.50	5.45	7.30	5.70	5.45	5.20	9.10
16.....	6.30	6.00	5.75	6.20	5.65	6.35	5.80	7.90	5.90	5.40	5.20	6.80
17.....	6.20	5.90	5.70	6.15	5.65	6.30	5.40	8.15	7.20	5.40	5.20	6.70
18.....	6.10	5.85	5.65	6.10	5.60	6.10	5.40	8.45	6.75	5.40	5.25	6.00
19.....	5.90	5.85	5.60	6.55	6.70	6.00	7.10	7.35	6.20	5.40	5.25	5.90
20.....	5.85	5.80	5.60	11.40	7.20	6.05	5.65	7.05	6.00	5.35	5.25	5.80
21.....	5.85	5.75	5.95	7.90	7.50	5.85	5.45	8.15	5.90	5.35	5.20	5.70
22.....	5.90	5.75	5.75	7.25	10.60	5.80	5.65	8.30	5.80	5.35	5.20	5.75
23.....	5.80	5.75	5.65	6.95	7.75	5.75	5.40	12.70	5.75	5.35	5.25	5.70
24.....	6.05	5.70	5.95	6.70	7.10	5.70	5.35	8.25	5.70	5.30	5.45	5.90
25.....	5.90	5.65	5.80	6.65	6.85	5.70	5.45	7.35	5.65	5.30	5.30	5.85
26.....	5.85	5.70	10.80	6.50	6.55	6.10	5.30	6.95	5.65	5.30	5.20	5.85
27.....	5.90	5.65	8.20	6.40	6.50	5.70	5.65	6.75	5.60	5.30	5.20	7.50
28.....	6.05	5.60	7.20	6.35	6.35	6.20	5.30	6.85	5.60	5.30	5.15	6.55
29.....	5.95	.....	6.80	6.20	6.35	6.05	5.50	7.00	5.75	5.30	5.15	13.30
30.....	6.00	.....	6.60	6.15	6.20	5.75	5.35	6.80	5.60	5.30	5.20	9.10
31.....	6.20	.....	6.50	.....	6.75	.....	5.50	6.70	.....	5.25	.....	7.50

## DAILY GAGE HEIGHT, IN FEET, OF HIWASSEE RIVER AT MURPHY, N. C., FOR 1902-1903.

1902.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	6.95	7.80	8.50	6.60	5.70	5.30	5.20	4.90	4.75	5.25	4.90	5.65
2.....	6.60	9.10	7.50	6.50	5.80	5.30	5.20	4.90	4.80	5.15	4.90	5.50
3.....	6.15	7.50	7.05	6.35	5.70	5.30	5.15	5.20	4.80	5.05	4.90	6.65
4.....	6.30	6.90	6.80	6.30	5.65	5.25	5.15	4.95	5.15	5.00	4.90	5.95
5.....	6.15	6.50	7.15	6.25	5.70	5.25	5.15	4.90	4.95	5.05	4.90	5.50
6.....	6.10	6.35	6.80	6.15	5.70	5.20	5.15	4.85	4.85	5.10	5.90	5.65
7.....	6.00	6.25	6.55	6.15	5.60	5.20	5.30	4.85	4.80	5.00	5.20	5.50
8.....	5.95	6.15	6.45	6.65	5.60	5.55	5.15	4.85	4.80	5.00	5.10	5.45
9.....	5.90	6.50	6.75	6.35	5.60	5.55	5.10	4.80	4.80	5.00	5.00	5.40
10.....	5.85	6.00	6.55	6.25	5.50	5.55	5.10	4.80	5.35	4.95	5.05	5.35
11.....	5.85	5.90	6.50	6.15	5.50	5.50	5.10	4.85	4.95	5.00	5.00	5.35
12.....	5.80	5.90	6.40	6.10	5.55	5.50	5.50	4.80	4.90	5.45	5.00	5.30
13.....	5.75	5.85	6.65	6.05	5.55	5.50	5.40	4.80	5.05	5.15	5.00	5.35
14.....	5.70	5.80	6.45	6.00	5.55	5.45	5.25	4.80	5.05	5.45	5.00	5.25
15.....	5.70	5.85	6.40	6.00	5.50	5.50	5.30	4.85	4.90	5.15	4.95	5.25
16.....	5.70	5.90	6.45	6.00	5.55	5.50	5.20	4.80	4.90	5.10	4.95	5.75
17.....	5.65	5.85	6.90	5.95	5.50	5.45	5.15	4.85	4.85	5.05	5.00	6.15
18.....	5.65	5.75	6.60	6.00	5.55	5.40	5.10	4.80	4.85	5.00	5.50	5.90
19.....	5.90	5.75	6.45	5.95	5.50	5.40	5.10	4.80	4.95	4.95	5.15	5.65
20.....	5.70	5.80	6.35	5.90	5.40	5.40	5.05	4.80	5.35	4.95	5.05	5.50
21.....	5.65	6.05	6.30	5.85	5.40	5.35	5.05	4.80	5.05	4.95	5.05	5.80
22.....	5.75	6.25	6.25	5.80	5.35	5.40	5.05	4.75	5.00	4.95	5.00	6.30
23.....	5.65	6.05	6.20	5.80	5.45	5.30	5.05	4.75	4.95	4.95	5.05	5.90
24.....	5.65	6.00	6.15	5.75	5.40	5.30	5.00	4.75	4.90	4.95	5.00	5.75
25.....	5.60	6.05	6.10	5.75	5.50	5.25	5.00	4.75	5.45	4.90	5.50	5.70
26.....	5.60	6.05	6.05	5.75	5.30	5.50	4.95	4.75	5.15	4.90	6.00	5.60
27.....	5.65	6.00	6.10	5.75	5.30	5.55	4.90	4.85	5.35	4.95	5.70	5.40
28.....	5.95	14.15	6.10	5.75	5.25	5.45	4.90	4.95	5.45	4.95	5.50	5.45
29.....	6.05	-----	10.90	5.70	5.25	5.30	4.90	4.90	5.15	4.90	5.40	5.40
30.....	6.10	-----	7.50	5.90	5.30	5.25	4.90	4.85	5.05	4.90	5.40	5.75
31.....	7.20	-----	6.90	-----	5.35	-----	4.90	4.90	-----	4.90	-----	5.50
1903.												
1.....	5.05	5.40	8.55	7.10	6.00	6.20	5.40	5.25	4.95	4.85	4.95	4.90
2.....	5.05	5.40	7.35	6.85	5.95	6.25	5.50	6.50	4.95	4.85	4.90	4.90
3.....	5.65	5.50	6.95	6.70	5.90	5.90	5.45	5.70	5.00	4.85	4.90	4.90
4.....	5.85	6.60	6.75	6.95	6.30	5.75	5.40	5.30	5.00	4.90	4.95	4.90
5.....	5.80	6.90	6.55	6.55	5.85	6.40	5.35	6.15	5.00	4.85	5.40	4.90
6.....	5.70	6.25	6.60	6.45	5.85	6.75	5.45	5.40	4.95	4.85	5.05	4.90
7.....	5.60	6.25	6.45	6.40	5.80	6.35	5.65	5.30	4.90	4.85	4.95	4.85
8.....	5.60	7.60	7.95	6.70	5.80	6.50	5.45	5.20	4.90	5.90	4.95	4.85
9.....	5.50	6.90	7.75	6.80	5.75	5.90	5.40	5.15	5.05	5.05	4.90	4.85
10.....	5.50	6.45	7.35	6.55	5.75	5.85	5.65	5.10	4.95	4.90	4.90	4.90
11.....	5.55	7.20	9.95	6.45	5.70	6.30	5.50	5.20	4.90	4.85	4.90	4.90
12.....	5.95	7.35	8.20	6.30	5.70	5.90	6.15	5.10	4.90	4.85	5.15	4.90
13.....	5.70	6.75	7.50	6.50	5.75	5.75	6.10	5.00	4.90	4.85	5.00	4.95
14.....	5.70	6.45	7.10	7.65	5.70	5.65	6.10	5.00	4.90	4.85	4.95	5.05
15.....	5.60	6.25	6.85	7.25	5.70	5.65	5.70	5.10	5.15	4.85	5.00	4.95
16.....	5.55	6.20	6.70	6.90	5.65	5.60	5.55	5.15	5.45	4.85	4.95	4.90
17.....	5.60	9.15	6.55	6.70	5.60	5.55	5.75	5.20	5.10	4.95	5.00	4.85
18.....	5.90	7.30	6.45	6.55	5.60	5.50	5.50	5.20	5.05	5.05	5.45	4.85
19.....	5.40	6.75	6.35	6.45	5.55	5.50	5.45	5.10	4.95	4.90	5.00	4.85
20.....	5.35	6.50	6.25	6.40	5.55	5.50	5.45	5.20	4.95	4.90	5.00	5.05
21.....	5.40	6.35	6.90	6.45	6.10	5.65	5.35	5.10	4.95	4.90	5.00	5.25
22.....	5.35	6.20	7.10	6.25	5.55	5.45	5.35	5.10	4.95	4.85	4.95	5.00
23.....	5.35	6.05	11.80	6.20	5.50	5.50	5.35	5.05	4.90	4.85	4.95	5.00
24.....	5.35	6.00	8.75	6.15	5.50	5.45	5.30	5.05	4.90	4.90	4.95	4.95
25.....	5.40	5.95	7.65	6.10	5.45	5.40	5.25	5.05	4.90	4.85	4.95	4.95
26.....	5.35	5.85	7.15	6.25	5.45	5.45	5.25	5.00	4.85	4.85	4.95	5.00
27.....	5.50	5.80	6.90	6.10	5.45	5.75	5.25	5.00	4.90	4.85	4.95	4.95
28.....	5.35	12.00	6.75	6.05	5.45	5.85	5.25	5.00	4.90	4.85	4.90	5.05
29.....	5.55	-----	6.65	6.00	5.95	5.55	5.30	4.95	4.90	4.85	4.90	5.00
30.....	5.45	-----	7.85	5.95	5.60	5.45	5.35	4.95	4.85	4.90	4.90	4.95
31.....	5.40	-----	7.55	-----	5.80	-----	5.40	4.95	-----	4.95	-----	4.95

## DAILY GAGE HEIGHT, IN FEET, OF HIWASSEE RIVER AT MURPHY, N. C., FOR 1904-1905.

1904.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	4.90	5.15	5.50	5.75	5.45	5.50	5.25	5.50	5.20	4.80	4.75	5.15
2.....	4.90	5.10	5.50	5.70	5.40	5.35	5.10	5.20	5.10	4.80	4.75	5.00
3.....	5.05	5.25	5.55	5.60	5.45	5.30	5.10	5.05	5.05	4.80	4.80	5.55
4.....	4.95	5.10	5.55	5.55	5.45	5.25	5.05	5.05	5.30	4.80	5.00	5.15
5.....	4.90	5.10	5.45	5.55	5.50	5.20	5.45	5.05	5.55	4.80	4.95	5.15
6.....	4.85	5.10	5.40	5.50	5.45	5.15	5.10	5.65	5.15	4.80	4.90	5.95
7.....	5.00	5.15	7.80	5.95	5.40	6.85	5.10	5.15	5.10	4.80	4.80	5.40
8.....	4.85	6.00	6.60	6.50	5.55	5.65	5.05	5.85	5.05	4.80	4.80	5.15
9.....	4.90	5.50	6.15	5.95	5.55	5.35	6.15	5.45	5.00	4.75	4.80	5.10
10.....	4.90	5.45	5.90	6.05	6.05	5.25	5.25	5.25	5.00	4.75	4.80	5.15
11.....	4.95	5.40	6.00	5.95	5.80	5.25	5.10	5.65	5.00	4.75	4.80	5.15
12.....	5.05	5.35	5.75	5.80	5.70	5.35	5.10	5.45	4.95	4.75	4.80	5.00
13.....	5.05	5.25	5.70	5.70	5.60	5.20	5.25	5.50	4.95	4.75	5.00	5.05
14.....	5.10	5.20	6.25	5.65	5.55	5.15	5.10	5.25	4.95	4.75	5.00	5.05
15.....	5.00	5.60	6.00	5.60	5.55	5.15	5.00	7.25	4.95	4.75	5.00	5.00
16.....	5.00	5.40	5.75	5.65	5.45	5.10	5.00	5.45	4.90	4.75	4.90	5.00
17.....	5.70	5.30	5.70	5.55	5.45	5.10	5.35	5.25	4.90	4.75	4.80	5.05
18.....	5.35	5.25	5.65	5.55	5.45	5.10	5.35	5.15	4.90	4.75	4.80	5.05
19.....	5.20	5.25	5.60	5.50	5.40	5.10	5.00	5.10	4.85	4.75	4.85	5.05
20.....	5.15	6.05	5.50	5.45	5.35	5.65	4.95	5.45	4.85	4.75	4.85	5.00
21.....	5.10	5.70	5.50	5.60	5.35	5.30	4.95	5.20	4.95	4.75	4.80	4.95
22.....	5.20	6.55	6.50	5.45	5.30	5.20	5.20	5.10	4.90	4.75	4.90	4.95
23.....	6.30	6.40	7.40	5.40	5.30	5.15	5.05	5.10	4.90	4.70	4.90	4.95
24.....	5.70	6.00	7.35	5.40	5.30	5.10	5.05	5.50	4.85	4.75	4.95	5.00
25.....	5.45	5.75	6.50	5.40	5.25	5.05	5.15	5.35	4.85	4.75	4.85	5.25
26.....	5.35	5.60	6.35	5.40	5.25	5.25	5.00	5.10	4.85	4.75	4.85	5.15
27.....	5.25	5.60	6.35	5.75	5.25	5.60	4.95	5.60	4.85	4.75	4.85	5.10
28.....	5.20	5.50	6.10	5.60	5.20	5.10	4.95	5.30	4.85	4.80	4.80	6.45
29.....	5.20	5.45	6.00	5.55	5.20	5.85	5.05	5.15	4.85	4.80	4.80	5.65
30.....	5.05		5.90	5.50	5.20	5.30	5.20	5.10	4.85	4.80	5.25	5.40
31.....	5.20		5.80		6.10		4.95	5.10		4.75		5.30
1905.												
1.....	5.25	5.30	5.80	5.55	6.30	5.70	5.85	5.20	5.15	5.00	5.00	5.20
2.....	5.20	5.25	5.80	5.55	6.05	5.65	6.00	5.20	5.25	4.95	5.00	5.15
3.....	5.45	5.20	5.70	5.50	5.90	5.55	5.45	5.15	5.30	5.00	5.00	10.00
4.....	5.40	5.20	5.60	5.50	5.90	5.55	5.35	5.15	5.20	5.50	5.00	6.50
5.....	5.35	5.20	5.60	5.65	5.80	5.50	5.65	5.20	5.15	5.10	5.00	5.90
6.....	5.35	5.95	5.60	5.65	6.10	5.50	5.40	5.15	5.10	5.00	5.00	5.65
7.....	5.80	5.75	5.60	5.70	6.20	5.50	5.45	5.15	5.10	5.00	5.10	5.55
8.....	5.50	5.70	5.60	5.60	6.70	5.45	5.35	5.35	5.10	5.00	5.00	5.55
9.....	5.45	8.75	5.60	5.70	6.05	5.40	5.35	5.35	5.10	4.95	5.00	8.70
10.....	5.40	6.95	6.10	5.65	5.90	5.40	6.35	5.25	5.05	5.00	5.00	7.00
11.....	5.40	6.30	6.00	5.60	5.80	5.35	6.55	6.30	5.15	7.55	5.00	6.35
12.....	5.50	6.10	5.80	5.85	5.75	5.40	10.30	5.80	5.15	5.45	5.00	6.05
13.....	6.60	7.00	5.80	5.85	5.90	5.35	6.85	5.75	5.10	5.20	5.00	5.85
14.....	6.55	6.30	5.70	5.75	5.70	5.40	6.15	6.30	5.10	5.10	5.00	5.75
15.....	6.60	6.30	5.60	5.70	5.65	5.30	5.85	5.90	5.05	5.10	5.00	5.85
16.....	5.80	6.00	5.60	5.80	7.20	5.40	5.80	5.75	5.05	5.20	5.00	5.80
17.....	5.65	5.90	5.60	5.70	6.45	5.50	5.65	5.60	5.05	5.10	5.00	5.70
18.....	5.60	5.80	5.60	5.65	6.10	5.40	5.55	5.50	5.00	5.05	5.00	5.65
19.....	5.50	5.70	5.55	5.60	5.95	5.60	5.60	5.45	5.00	5.05	5.00	5.60
20.....	5.60	6.20	5.65	5.55	5.85	5.50	5.50	5.40	5.00	5.05	5.35	5.65
21.....	5.45	8.20	7.00	5.55	5.80	5.50	5.40	5.35	5.00	5.05	5.15	6.60
22.....	5.40	7.20	6.25	5.65	5.85	5.80	5.50	5.30	5.00	5.00	5.10	6.20
23.....	5.35	6.60	6.05	5.50	6.45	6.75	5.40	5.25	5.00	5.00	5.05	6.15
24.....	5.35	6.40	5.90	5.50	6.95	5.55	5.35	6.50	4.95	5.00	5.00	6.40
25.....	5.30	6.20	5.85	5.45	6.35	5.55	5.40	5.50	4.95	5.00	5.15	6.10
26.....	5.25	6.10	5.75	5.50	6.20	5.35	5.30	5.60	4.95	5.30	5.20	5.95
27.....	5.25	6.00	5.70	5.90	6.10	5.35	5.30	5.35	4.95	5.15	5.10	5.80
28.....	5.20	5.90	5.65	5.80	5.95	5.45	5.35	5.30	4.95	5.10	5.10	5.75
29.....	5.15		5.65	5.70	5.85	5.40	5.45	5.25	4.95	5.05	5.10	5.90
30.....	5.30		5.65	6.95	5.80	5.55	5.30	5.20	4.95	5.05	5.20	5.70
31.....	5.20		5.60		5.95		5.25	5.20		5.00		5.65

## DAILY GAGE HEIGHT, IN FEET, OF HIWASSEE RIVER AT MURPHY, N. C., FOR 1906-1907.

1906.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	5.60	6.10	5.50	6.70	5.75	5.40	5.40	6.40	6.65	9.00	5.70	6.00
2.....	5.60	6.05	5.50	6.45	5.75	6.70	5.40	6.40	6.30	7.60	5.70	6.00
3.....	5.85	5.95	5.65	6.25	5.75	5.65	5.40	6.20	6.15	7.80	5.70	6.00
4.....	8.20	5.90	6.15	6.15	5.85	5.80	5.65	6.30	6.10	7.80	5.65	5.95
5.....	6.90	5.90	5.90	6.10	5.75	5.85	5.40	6.10	6.10	7.20	5.65	5.90
6.....	6.45	5.85	5.75	6.05	5.70	5.80	5.40	6.00	5.95	7.40	5.65	5.90
7.....	6.25	5.85	5.70	6.00	6.15	5.60	5.50	6.25	5.90	7.20	5.65	6.10
8.....	6.10	5.80	5.90	5.95	5.85	5.50	5.35	5.90	6.40	6.85	5.60	5.95
9.....	6.05	5.80	5.80	5.95	5.70	5.50	5.75	5.90	5.85	6.60	5.60	5.90
10.....	6.20	5.75	5.75	6.55	5.70	5.40	5.40	5.70	5.85	6.50	5.60	5.90
11.....	5.90	5.70	5.70	6.25	5.65	5.40	5.40	5.65	5.75	6.35	5.60	6.70
12.....	6.30	5.70	5.65	6.10	5.65	5.55	5.45	5.60	6.70	6.25	5.75	6.30
13.....	6.05	5.70	5.65	6.05	5.65	5.75	5.40	5.60	5.90	6.15	5.60	6.15
14.....	6.05	5.65	5.65	6.00	5.60	6.20	5.35	6.30	5.70	6.10	5.60	6.10
15.....	5.95	5.65	7.60	7.40	5.55	6.15	6.90	7.40	5.70	6.05	5.55	6.06
16.....	5.95	5.65	6.95	6.75	5.50	6.55	6.45	6.25	5.65	6.00	5.60	5.95
17.....	5.85	5.60	6.40	6.45	5.50	6.10	8.20	5.90	5.60	6.00	5.65	6.10
18.....	5.95	5.60	6.20	6.25	5.50	5.85	6.45	5.95	5.05	5.95	6.60	7.15
19.....	5.95	5.55	6.20	6.15	5.45	5.75	5.95	6.00	7.00	6.50	15.80	6.60
20.....	5.85	5.55	7.20	6.05	5.45	5.70	6.40	6.25	6.35	6.20	8.20	6.65
21.....	5.85	5.65	6.65	6.00	5.40	5.55	6.45	6.10	6.25	6.10	7.20	6.50
22.....	5.95	5.70	6.40	5.95	5.45	5.10	6.30	6.20	6.30	6.05	6.95	6.25
23.....	9.50	5.60	6.25	5.90	5.40	5.45	6.20	5.95	6.25	6.00	6.60	6.20
24.....	7.50	5.60	6.10	5.85	5.35	6.20	6.05	6.10	6.30	5.95	6.45	6.10
25.....	6.60	5.60	6.10	5.80	5.35	5.95	5.85	6.00	6.15	5.90	6.30	6.10
26.....	6.70	5.55	6.10	5.80	5.45	6.00	6.05	5.80	6.10	5.85	6.25	6.00
27.....	6.65	5.55	6.10	5.80	6.25	5.65	5.85	6.05	6.05	5.80	6.20	6.00
28.....	6.25	5.50	6.05	6.85	5.65	5.55	5.75	5.80	5.95	5.75	6.15	6.75
29.....	6.35	-----	6.05	5.90	5.55	5.60	5.70	6.40	7.10	5.75	6.10	7.60
30.....	6.25	-----	6.50	5.85	5.45	5.50	6.30	8.70	9.60	5.75	6.05	6.90
31.....	6.20	-----	7.20	-----	5.40	-----	5.85	7.40	-----	5.75	-----	7.80
1907.												
1.....	6.90	6.35	6.25	6.05	5.95	6.75	5.65	5.60	5.35	5.85	5.30	5.65
2.....	6.75	7.30	8.30	5.75	5.90	6.60	5.65	5.55	5.30	5.70	5.35	5.60
3.....	6.60	6.60	7.10	5.70	5.85	6.30	5.60	5.45	5.35	5.60	5.70	5.55
4.....	6.45	6.40	6.60	5.70	6.30	6.10	6.05	5.45	5.45	5.55	5.45	5.45
5.....	6.35	7.60	6.40	5.65	5.85	6.00	5.60	5.40	6.70	5.65	5.40	5.45
6.....	6.25	6.90	6.25	6.00	5.80	5.75	5.55	5.45	5.30	5.50	5.40	5.45
7.....	6.20	6.55	6.15	5.90	6.25	5.75	5.50	5.45	5.30	5.45	5.40	5.45
8.....	6.15	6.35	6.25	5.95	6.10	5.80	5.45	5.40	5.30	5.60	5.35	5.45
9.....	6.10	6.25	6.10	5.85	6.00	6.40	5.40	5.40	5.70	5.50	5.35	5.45
10.....	6.10	6.15	6.25	5.85	5.95	6.20	5.40	5.35	6.40	5.45	5.65	6.70
11.....	6.05	6.10	6.25	5.75	6.40	6.00	5.75	5.35	6.55	5.40	5.95	6.10
12.....	6.05	6.05	6.15	5.85	5.85	5.90	5.85	6.05	5.50	5.40	5.70	5.90
13.....	6.00	6.00	6.10	5.85	5.80	5.80	7.25	5.70	5.40	5.35	5.60	5.80
14.....	5.95	5.95	6.05	5.75	6.05	6.25	5.90	5.60	5.35	5.35	5.50	6.80
15.....	5.95	5.90	6.20	5.70	6.05	5.85	5.75	6.60	5.30	5.30	5.50	6.35
16.....	5.95	5.85	6.05	5.85	5.95	5.75	5.90	6.05	5.30	5.35	5.45	6.10
17.....	5.90	5.85	6.00	5.85	5.90	5.70	5.70	5.85	5.30	5.20	5.45	5.95
18.....	5.90	5.85	6.00	5.80	5.85	5.95	5.70	5.90	5.30	5.30	5.65	5.90
19.....	5.85	5.80	5.95	6.20	5.80	5.75	6.05	6.05	5.25	5.30	5.60	5.80
20.....	6.00	5.85	5.90	5.95	5.75	5.70	5.80	5.75	5.25	5.30	5.60	5.70
21.....	5.90	5.80	5.85	5.85	5.75	5.65	5.60	6.35	5.25	5.30	5.85	5.75
22.....	5.85	5.75	5.85	5.80	5.75	5.70	5.55	6.50	5.30	5.25	5.90	5.65
23.....	5.85	5.75	5.80	7.20	5.65	6.05	5.50	6.10	11.40	5.30	6.60	7.00
24.....	5.85	5.75	5.80	6.65	5.65	6.00	5.45	5.90	6.85	5.30	7.40	6.50
25.....	5.80	6.15	5.75	6.30	5.75	6.45	5.40	5.80	5.95	5.30	6.50	6.35
26.....	5.85	5.90	5.80	6.15	5.95	5.80	5.45	5.60	5.70	5.25	6.15	6.05
27.....	5.80	6.45	5.75	6.45	6.05	5.75	5.50	5.50	5.60	5.30	5.90	5.95
28.....	5.80	6.15	5.70	6.05	5.80	5.70	5.60	5.45	5.65	5.70	5.85	5.95
29.....	5.75	-----	5.70	6.00	5.70	6.05	5.40	5.40	6.80	5.35	5.75	5.90
30.....	5.75	-----	5.70	6.00	5.65	5.75	8.70	5.40	6.10	5.30	5.70	6.95
31.....	5.75	-----	5.70	-----	6.05	-----	5.85	5.35	-----	5.30	-----	7.00

## DAILY GAGE HEIGHT, IN FEET, OF HIWASSEE RIVER AT MURPHY, N. C., FOR 1906.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1.....	6.55	7.30	6.20	6.40	6.45	5.90	5.25	5.20	5.25	5.00
2.....	6.35	6.55	6.10	6.30	6.30	5.70	5.90	5.15	5.20	5.00
3.....	6.15	6.35	6.40	6.20	6.25	5.65	5.45	5.10	5.20	5.00
4.....	6.05	6.30	6.30	6.10	6.15	5.95	5.50	5.20	5.15	4.95
5.....	6.90	6.25	6.20	6.20	6.10	5.75	6.45	5.30	5.20	5.00
6.....	5.00	6.55	6.20	6.40	6.15	6.00	5.90	5.60	6.20	5.00
7.....	6.70	6.30	6.10	6.20	7.70	5.70	5.90	5.50	5.50	4.95
8.....	6.45	6.20	6.10	6.10	6.60	5.65	6.10	5.45	5.35	5.00
9.....	6.25	6.20	6.50	6.00	6.40	5.60	5.80	6.00	5.30	5.20
10.....	6.75	6.25	6.10	6.10	6.25	5.60	6.25	5.40	5.25	6.35
11.....	6.70	6.90	6.10	6.00	6.15	5.85	6.20	5.25	5.20	5.35
12.....	9.20	6.95	7.20	6.90	6.10	5.60	5.75	5.20	5.20	5.20
13.....	7.00	6.95	6.60	6.00	6.00	5.50	5.60	5.15	5.15	5.00
14.....	6.75	6.95	6.40	5.90	5.95	6.25	5.55	5.20	5.15	5.30
15.....	6.65	10.00	6.30	6.10	5.90	5.85	5.50	5.10	5.10	5.35
16.....	6.60	8.10	6.20	6.70	5.95	5.60	5.70	5.15	5.10	5.30
17.....	6.65	6.85	6.10	6.60	5.90	5.55	5.40	5.10	5.10	5.40
18.....	6.55	6.30	6.10	6.30	5.95	5.50	5.35	5.15	5.10	5.40
19.....	6.45	6.85	6.00	6.70	6.35	5.55	5.75	5.15	5.05	5.40
20.....	6.30	6.60	7.00	6.50	6.10	5.50	5.40	5.50	5.10	5.40
21.....	6.30	6.50	7.40	6.30	5.90	5.50	5.35	5.20	5.10	5.45
22.....	6.25	6.40	6.80	6.20	5.85	5.60	5.30	6.30	5.05	5.45
23.....	6.75	6.35	7.40	6.05	5.80	5.45	5.25	5.70	5.10	6.35
24.....	6.05	6.30	9.90	6.05	6.25	5.40	5.30	6.00	5.05	6.10
25.....	6.05	6.20	8.00	8.10	6.00	5.45	5.25	6.85	5.00	5.90
26.....	6.10	6.50	7.30	7.60	6.20	5.40	5.20	5.90	5.00	5.85
27.....	6.70	6.30	7.00	7.10	6.10	5.35	5.25	5.25	5.00	5.75
28.....	6.50	6.20	6.80	6.70	5.90	5.30	5.20	5.50	5.00	5.90
29.....	6.10	6.10	6.70	6.50	5.85	5.35	5.45	5.40	5.20	5.60
30.....	6.00	.....	6.50	6.40	6.20	5.30	5.30	5.30	5.15	6.30
31.....	6.00	.....	6.40	.....	6.90	.....	5.20	5.30	.....	6.10

NOTE.—About October 14, a fish trap was put in below the gage, which when finished raised water about half a foot.

## RATING TABLE FOR HIWASSEE RIVER AT MURPHY, N. C., OCTOBER 20, 1897, TO DECEMBER 31, 1898.

Gage Height (Feet).	Discharge (Second-foot).	Gage Height (Feet).	Discharge (Second-foot).	Gage Height (Feet).	Discharge (Second-foot).	Gage Height (Feet).	Discharge (Second-foot).
4.7	220	5.8	940	6.9	2,320	8.0	4,800
4.8	260	5.9	1,070	7.0	3,000	8.5	5,700
4.9	300	6.0	1,200	7.1	3,180	9.0	6,600
5.0	340	6.1	1,380	7.2	3,360	9.5	7,500
5.1	390	6.2	1,560	7.3	3,540	10.0	8,400
5.2	450	6.3	1,740	7.4	3,720	10.5	9,300
5.3	520	6.4	1,920	7.5	3,900	11.0	10,200
5.4	590	6.5	2,100	7.6	4,080	12.0	12,000
5.5	670	6.6	2,280	7.7	4,260		
5.6	750	6.7	2,460	7.8	4,440		
5.7	845	6.8	2,640	7.9	4,620		

RATING TABLE FOR HIWASSEE RIVER AT MURPHY, N. C., FOR 1899.

Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).
4.70	252	5.70	884	7.40	3,660	13.00	13,180
4.80	280	5.80	1,016	7.60	4,000	14.00	14,880
4.90	310	5.90	1,148	7.80	4,340	15.00	16,580
5.00	340	6.00	1,280	8.00	4,680	16.00	18,280
5.10	396	6.20	1,620	8.50	5,530	17.00	19,980
5.20	452	6.40	1,960	9.00	6,380	18.00	21,680
5.30	508	6.60	2,300	9.50	7,230	19.00	23,380
5.40	564	6.80	2,640	10.00	8,080		
5.50	620	7.00	2,980	11.00	9,780		
5.60	752	7.20	2,320	12.00	11,480		

RATING TABLE FOR HIWASSEE RIVER AT MURPHY, N. C., FOR 1900.\*

4.80	310	5.00	861	6.40	2,025	7.40	3,775
4.90	362	5.70	977	6.50	2,200	7.60	4,125
5.00	415	5.80	1,093	6.60	2,375	7.80	4,475
5.10	481	5.90	1,209	6.70	2,550	8.00	4,825
5.20	547	6.00	1,325	6.80	2,725	8.50	5,700
5.30	613	6.10	1,500	6.90	2,900		
5.40	679	6.20	1,675	7.00	3,075		
5.50	745	6.30	1,850	7.20	3,425		

\*Above gage height 8.5 feet use the rating table for 1901-1903.

RATING TABLE FOR HIWASSEE RIVER AT MURPHY, N. C., FOR 1901-1903.

4.80	205	5.90	940	6.80	2,640	7.80	4,440
4.90	265	5.90	1,070	6.90	2,820	7.90	4,620
5.00	325	6.00	1,200	7.00	3,000	8.00	4,800
5.10	385	6.10	1,380	7.10	3,180	8.50	5,700
5.20	450	6.20	1,560	7.20	3,360	9.00	6,600
5.30	520	6.30	1,740	7.30	3,540	9.50	7,500
5.40	590	6.40	1,920	7.40	3,720	10.00	8,400
5.50	670	6.50	2,100	7.50	3,900	10.50	9,300
5.60	750	6.60	2,280	7.60	4,080	11.00	10,200
5.70	845	6.70	2,460	7.70	4,260	12.00	12,000

RATING TABLE FOR HIWASSEE RIVER AT MURPHY, N. C., FOR 1904 AND 1905.

4.80	190	5.60	710	6.30	1,540	7.00	2,740
4.90	235	5.70	800	6.40	1,690	7.10	2,930
5.00	285	5.80	900	6.50	1,850	7.20	3,130
5.10	340	5.90	1,010	6.60	2,020	7.30	3,330
5.20	400	6.00	1,130	6.70	2,190	7.40	3,540
5.30	470	6.10	1,260	6.80	2,370	7.50	3,750
5.40	540	6.20	1,400	6.90	2,550	7.60	3,960
5.50	620						

NOTE.—The above table is based on 62 discharge measurements made during 1900-1905. It is well defined between gage heights 4.8 feet and 6.8 feet. The table has been extended beyond these limits. Above 7.6 feet the rating curve is a tangent, the difference being 220 per tenth.

RATING TABLE FOR HIWASSEE RIVER AT MURPHY, N. C., FOR 1906 AND 1907.

Gage Height: Feet.	Discharge Second- feet.	Gage Height: Feet.	Discharge Second- feet.	Gage Height: Feet.	Discharge Second- feet.	Gage Height: Feet.	Discharge Second- feet.
5.00	310	5.90	1,010	6.80	2,370	7.70	4,150
5.10	365	6.00	1,120	6.90	2,530	7.80	4,400
5.20	425	6.10	1,260	7.00	2,740	7.90	4,630
5.30	490	6.20	1,400	7.10	2,930	8.00	4,840
5.40	560	6.30	1,540	7.20	3,130	8.20	5,280
5.50	625	6.40	1,680	7.30	3,320	8.40	5,720
5.60	715	6.50	1,850	7.40	3,540		
5.70	800	6.60	2,020	7.50	3,750		
5.80	900	6.70	2,190	7.60	3,980		

NOTE.—The above table is applicable only for open-channel conditions. It is based on discharge measurements made during 1900 to 1907. It is well defined between gage heights 5.0 feet and 6.5 feet. Above gage height 5.0 feet the rating curve is a tangent, the difference being 220 per tenth.

## ESTIMATED MONTHLY DISCHARGE OF HIWASSEE RIVER AT MURPHY, N. C.

[Drainage area, 410 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maxi- mum.	Mini- mum.	Mean.	Second- feet per Square Mile.	Depth in Inches.
1897.*					
October 20-31.....	340	200	243	0.583	0.265
November.....	500	300	344	.539	.936
December.....	3,630	340	829	2.02	2.33
1898.*					
January.....	4,350	390	1,049	2.56	2.95
February.....	768	464	557	1.36	1.42
March.....	10,400	450	1,171	2.86	3.30
April.....	6,150	795	1,542	3.76	4.20
May.....	940	300	630	1.54	1.78
June.....	670	320	307	.968	1.08
July.....	1,560	300	667	1.63	1.88
August.....	8,400	750	2,306	5.62	6.48
September.....	15,500	500	2,659	6.49	7.24
October.....	16,300	670	2,677	6.53	7.53
November.....	2,460	960	1,240	3.02	3.37
December.....	1,380	840	1,031	2.51	2.89
The year.....	16,300	300	1,327	3.24	44.12
1899.					
January.....	1,790	620	878	2.14	2.47
February.....	14,890	720	3,088	7.53	7.84
March.....	22,360	1,450	3,715	9.06	10.45
April.....	3,320	1,120	1,744	4.25	4.74
May.....	1,450	460	719	1.75	2.02
June.....	970	295	440	1.07	1.19
July 8 to 28.....	2,640	340	556	1.36	1.06
August.....	840	340	404	.99	1.14
September.....	620	310	373	.91	1.01
October.....	840	265	339	.83	.95
November.....	905	295	356	.87	.97
December.....	6,550	340	800	1.95	2.25

\*Revised estimates.

## ESTIMATED MONTHLY DISCHARGE OF HIWASSEE RIVER AT MURPHY, N. C.—Continued.

Month.	Discharge in Second-feet.			Run-off.	
	Maxi- mum.	Mini- mum.	Mean.	Second- feet per Square Mile.	Depth in Inches.
1900.*					
January.....	2,375	535	858	2.09	2.41
February.....	13,080	475	1,829	4.46	4.64
March.....	3,950	1,325	2,141	5.22	6.01
April.....	3,250	1,030	1,717	4.19	4.67
May.....	1,500	670	877	2.14	2.47
June.....	3,425	670	1,702	4.15	4.63
July.....	3,075	670	1,170	2.85	3.20
August.....	1,165	475	588	1.43	1.65
September.....	3,075	415	664	1.62	1.81
October.....	3,250	310	596	1.45	1.67
November.....	2,550	505	725	1.77	1.98
December.....	3,425	600	1,043	2.54	2.93
The year.....	13,080	310	1,159	2.83	38.16
1901.					
January.....	6,660	670	1,599	3.90	4.50
February.....	3,990	750	1,429	3.49	3.63
March.....	9,840	710	1,554	3.79	4.37
April.....	10,920	1,380	2,535	6.18	6.89
May.....	9,480	750	1,941	4.73	5.45
June.....	2,100	840	1,265	3.09	3.45
July.....	3,180	520	829	2.02	2.33
August.....	13,260	450	3,068	7.48	8.62
September.....	3,360	750	1,254	3.06	3.42
October.....	1,560	485	627	1.53	1.76
November.....	630	420	484	1.18	1.32
December.....	14,340	450	1,970	4.82	5.55
The year.....	14,340	420	1,547	3.77	51.29
1902.					
January.....	3,360	750	1,203	2.93	3.28
February.....	15,870	892	2,259	5.51	5.74
March.....	10,020	1,290	2,582	6.30	7.26
April.....	2,370	845	1,331	3.25	3.63
May.....	940	485	677	1.65	1.90
June.....	710	450	587	1.43	1.60
July.....	670	265	363	.89	1.03
August.....	450	190	232	.57	.66
September.....	555	190	336	.82	.91
October.....	485	265	347	.85	.98
November.....	1,200	265	450	1.10	1.23
December.....	2,370	520	834	2.03	2.34
The year.....	15,870	190	934	2.28	30.66
1903.					
January.....	1,135	355	698	1.70	1.96
February.....	12,000	590	2,498	6.09	6.34
March.....	11,640	1,650	3,708	9.04	10.42
April.....	4,170	1,135	2,143	5.23	5.83
May.....	1,740	630	890	2.17	2.50
June.....	2,550	590	1,053	2.57	2.87
July.....	1,470	485	695	1.70	1.96
August.....	2,100	295	500	1.22	1.41
September.....	630	235	304	.74	.83
October.....	1,070	235	280	.68	.78
November.....	630	265	320	.78	.87
December.....	485	235	290	.71	.82
The year.....	12,000	235	1,115	2.72	36.59

\*Low-water estimates for 1900 are probably a few per cent too high.



## ESTIMATED MONTHLY DISCHARGE OF HIWASSEE RIVER AT MURPHY, N. C.—Continued.

Month.	Discharge in Second-feet.			Run-off.	
	Maxi- mum.	Mini- mum.	Mean.	Second- feet per Square Mile.	Depth in Inches.
1904.					
January.....	1,540	212	401	.978	1.13
February.....	1,935	340	671	1.64	1.77
March.....	4,400	540	1,303	3.17	3.66
April.....	1,850	540	777	1.90	2.12
May.....	1,280	400	605	1.48	1.71
June.....	2,480	312	532	1.30	1.45
July.....	1,330	260	380	.927	1.07
August.....	3,230	312	573	1.40	1.61
September.....	665	212	282	.688	.768
October.....	190	150	176	.429	.495
November.....	435	170	224	.546	.609
December.....	1,770	260	438	1.07	1.23
The year.....	4,400	150	530	1.29	17.62
1905.					
January.....	2,020	370	665	1.70	1.96
February.....	6,600	400	1,602	3.91	4.07
March.....	2,740	665	907	2.21	2.55
April.....	2,645	580	815	1.99	2.22
May.....	3,130	755	1,282	3.13	3.61
June.....	2,280	470	664	1.62	1.81
July.....	10,500	435	1,102	2.69	3.10
August.....	1,850	370	647	1.58	1.82
September.....	470	260	307	.749	.836
October.....	3,855	260	449	1.10	1.27
November.....	505	285	316	.771	.860
December.....	9,550	370	1,518	3.70	4.27
The year.....	10,500	260	859	2.10	28.38
1906.					
January.....	8,140	715	1,760	4.29	4.95
February.....	1,260	635	830	2.02	2.10
March.....	3,960	635	1,410	3.44	3.97
April.....	3,540	900	1,410	3.44	3.84
May.....	1,470	525	749	1.83	2.11
June.....	2,190	365	912	2.22	2.48
July.....	5,280	560	1,150	2.80	3.23
August.....	6,380	715	1,520	3.71	4.28
September.....	8,360	338	1,570	3.83	4.27
October.....	7,040	850	1,950	4.76	5.49
November.....	22,000	715	1,990	4.85	5.41
December.....	4,400	1,010	1,630	3.98	4.59
The year.....	22,000	338	1,410	3.43	46.72
1907.					
January.....	2,550	850	1,220	2.98	3.44
February.....	3,960	850	1,460	3.56	3.71
March.....	5,500	800	1,370	3.34	3.85
April.....	3,130	758	1,150	2.80	3.12
May.....	1,690	758	1,010	2.46	2.84
June.....	2,280	758	1,130	2.76	3.08
July.....	6,380	560	1,030	2.51	2.89
August.....	2,020	525	861	2.10	2.42
September.....	12,300	458	1,200	2.93	3.27
October.....	955	458	577	1.41	1.63
November.....	3,540	525	915	2.23	2.49
December.....	2,740	598	1,220	2.98	3.44
The year.....	12,300	458	1,100	2.67	36.18

NOTE.—Values for 1906 are excellent.

## HIWASSEE RIVER NEAR HAYESVILLE, N. C.

This station was established on May 20, 1907. It is located at the Hiwassee iron wagon bridge  $2\frac{1}{2}$  miles east of Hayesville on the road to Hiwassee, Ga.

The gage is a vertical rod attached to a maple tree on left bank, about 200 feet above the bridge.

Discharge measurements are made from the downstream side on a single span iron wagon bridge, with short approaches at both ends.

The channel is straight for 500 feet above and 800 feet below the bridge. The current is swift and the bed is composed largely of rock and is permanent. Both banks of the river are high and will seldom be flooded beyond the end of the bridge.

The bench mark is top of downstream end of third iron floor beam from left end of steel span; elevation, 21.36 feet.

## DISCHARGE MEASUREMENTS OF HIWASSEE RIVER NEAR HAYESVILLE, N. C., FOR 1907.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
May 20	F. A. Murray	89	136	3.21	1.41	437
Aug. 23	Frank P. Thomas	90	134	2.91	1.32	390
Aug. 22	F. A. Murray	88	132	2.89	1.32	382
Oct. 14	Olin P. Hall	89	131	1.85	1.00	242

## DAILY GAGE HEIGHT, IN FEET, OF HIWASSEE RIVER NEAR HAYESVILLE, N. C., FOR 1907.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....		3.40	1.30	1.25	1.00	1.30	.90	1.25
2.....		1.90	1.30	1.20	.90	1.20	1.40	1.20
3.....		1.80	1.30	1.15	1.00	1.20	1.05	1.20
4.....		1.70	1.70	1.10	1.10	1.20	1.05	1.20
5.....		1.35	1.40	1.10	1.10	1.25	1.00	1.15
6.....		1.45	1.30	1.10	1.00	1.15	1.10	1.15
7.....		1.45	1.30	1.10	.95	1.10	1.00	1.15
8.....		2.30	1.30	1.20	1.00	1.45	1.00	1.10
9.....		1.90	1.30	1.10	1.00	1.15	.95	1.35
10.....		1.80	1.25	1.10	1.30	1.10	1.50	2.50
11.....		1.80	1.50	1.05	1.60	1.00	1.30	1.90
12.....		1.55	1.60	1.30	1.15	1.00	1.20	1.55
13.....		1.50	2.10	1.10	1.10	1.00	1.20	1.50
14.....		1.80	1.50	1.35	1.00	1.00	1.10	2.50
15.....		1.50	1.40	2.70	1.00	1.00	1.05	2.30
16.....		1.45	1.50	1.50	.95	1.00	1.00	1.90
17.....		1.40	1.40	1.30	.92	.95	1.00	1.80
18.....		1.40	1.35	1.70	.92	.90	1.40	1.70
19.....		1.40	1.40	1.45	.90	.90	1.20	1.60
20.....	1.40	1.40	1.40	1.30	.90	.90	1.15	1.50
21.....	1.40	1.40	1.35	1.35	.89	.90	1.90	1.40
22.....	1.40	1.35	1.30	1.35	1.05	.90	1.60	1.40
23.....	1.40	1.50	1.25	1.30	9.30	.90	2.10	2.90
24.....	1.40	1.60	1.20	1.35	2.10	1.00	2.90	2.20
25.....	1.40	1.35	1.20	1.20	1.50	.95	1.90	2.00
26.....	2.20	1.45	1.20	1.15	1.30	.90	1.60	1.90
27.....	1.55	1.40	1.15	1.10	1.20	1.40	1.50	1.80
28.....	1.40	1.40	1.15	1.05	1.80	1.10	1.40	1.70
29.....	1.40	1.50	1.10	1.05	1.80	1.00	1.30	1.60
30.....	1.40	1.40	2.10	1.00	1.50	.95	1.25	3.40
31.....	1.90		1.30	1.00		.90		2.40

DAILY GAGE HEIGHT, IN FEET, OF HIWASSEE RIVER NEAR HAYESVILLE, N. C., FOR 1908.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1.....	2.10	2.40	1.70	1.95	2.00	1.45	1.05	.90	1.00	.80
2.....	1.90	1.90	1.70	1.90	1.90	1.40	1.00	.90	.95	.80
3.....	1.80	1.80	1.95	1.85	1.95	1.40	1.20	.90	.90	.75
4.....	1.70	1.75	1.90	1.80	1.80	1.50	1.20	.90	.90	.75
5.....	3.10	1.70	1.83	1.75	1.80	1.40	1.90	1.00	.95	.75
6.....	2.35	2.00	1.80	1.90	1.80	1.40	1.50	1.30	1.50	.75
7.....	2.25	1.80	1.75	1.80	2.50	1.35	1.50	1.10	1.20	.75
8.....	2.00	1.70	1.70	1.75	1.95	1.35	1.90	1.10	1.10	.70
9.....	1.80	1.65	1.70	1.70	1.90	1.30	2.20	1.40	1.05	.90
10.....	1.70	2.20	1.65	1.70	1.85	1.30	1.70	1.05	1.00	1.50
11.....	1.75	2.40	1.60	1.65	1.75	1.40	1.70	1.00	1.00	1.05
12.....	5.00	2.70	2.40	1.60	1.70	1.30	1.40	.95	1.00	.95
13.....	3.10	2.60	1.90	1.60	1.65	1.25	1.30	.90	.95	.85
14.....	2.50	2.50	1.85	1.55	1.60	1.60	1.25	.90	.90	.85
15.....	2.30	7.90	1.80	2.40	1.60	1.45	1.20	.90	.90	.80
16.....	2.10	3.80	1.75	2.20	1.55	1.30	1.30	.85	.85	.80
17.....	2.20	3.00	1.65	2.05	1.55	1.25	1.20	.85	.80	.80
18.....	2.05	2.60	1.60	1.95	1.60	1.30	1.15	.90	.80	.80
19.....	1.90	2.65	1.60	2.15	2.10	1.20	1.30	.85	.80	.80
20.....	1.85	2.35	2.50	2.00	1.70	1.15	1.15	1.10	.80	.80
21.....	1.80	2.20	2.60	1.90	1.60	1.25	1.10	.90	.80	.80
22.....	1.80	2.05	2.20	1.80	1.55	1.30	1.05	1.50	.80	.75
23.....	1.80	2.00	5.20	1.80	1.50	1.20	1.00	1.35	.80	2.00
24.....	1.70	1.95	4.90	1.75	1.70	1.20	1.00	1.35	.80	1.50
25.....	1.65	1.90	3.20	4.90	1.60	1.20	1.10	1.95	.80	1.20
26.....	1.60	2.05	2.75	2.90	1.70	1.10	1.10	1.60	.80	1.10
27.....	1.90	1.90	2.50	2.60	1.70	1.10	1.05	1.40	.80	1.00
28.....	1.70	1.80	2.20	2.30	1.60	1.10	1.00	1.20	.95	1.10
29.....	1.75	1.80	2.15	2.15	1.50	1.10	1.10	1.10	.85	2.10
30.....	1.60	.....	2.05	2.15	1.60	1.05	1.05	1.10	.80	1.50
31.....	1.50	.....	2.00	.....	1.50	.....	1.00	1.05	.....	1.35

RATING TABLE FOR HIWASSEE RIVER NEAR HAYESVILLE, N. C., FOR 1907 AND 1908.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
0.75	164	.95	220	1.15	296	1.35	400
.80	176	1.00	236	1.20	318	1.40	430
.85	190	1.05	255	1.25	344	1.45	465
.90	204	1.10	274	1.30	370	1.50	500

## NOTTELY RIVER AT RANGER, N. C.

This station was established February 16, 1901. It is located at the wooden wagon bridge one-half mile from the railroad station at Ranger, N. C., and one-fourth mile below the Atlanta, Knoxville and Northern Railroad bridge.

The bridge is at a flat bend in the river, the channel curving slightly above and below the station for 600 feet. The right bank is high, rocky, and somewhat wooded and will overflow around the end of the bridge for about 50 feet only. The left bank is low and will overflow for a distance of 700 feet at a gage height of from 15 to 18 feet. The bed of the stream is of gravel and sand and probably shifts considerably. The current is somewhat broken and irregular, caused mostly by the piers. There is a moderate velocity and a depth of from 2 to 5 feet at low stages.

Discharge measurements are made from the wagon bridge, a wooden structure of 3 spans supported by 2 wooden piers and 2 stone abutments. The center span is 55 feet long, and the end spans are each 36 feet long. The floor of the bridge is about 20 feet above low water.

The gage is a vertical board in two sections, each 8 feet long, fastened to the left side of the first wooden pier from the right bank. The gage is read once each day by A. D. Kilpatrick. Bench marks were established as follows: (1) The heads of large wire nails driven into the top of the downstream end of the wooden cap on the left bent of the wooden pier nearest the right bank of the river; elevation, 20.05 feet. (2) A cut on a maple tree 18 inches in diameter, 25 feet from the upstream side of the bridge on the right bank, 25 feet from the edge of the water; elevation, 15.00 feet. Elevations refer to the datum of the gage.

The station was discontinued on December 31, 1905.

## DISCHARGE MEASUREMENTS OF NOTTLEY RIVER AT RANGER, N. C.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1901.						
Jan. 17	Olin P. Hall.....	--	---	---	4.50	730
Feb. 16	....do.....	--	330	1.97	4.20	649
Apr. 4	....do.....	--	431	2.25	5.40	970
June 27	....do.....	--	337	1.82	4.12	612
Oct. 31	....do.....	--	263	1.38	3.40	364
1902.						
Apr. 24	Olin P. Hall.....	--	307	1.95	4.20	598
Aug. 14	....do.....	--	204	1.04	2.70	213
Nov. 21	....do.....	--	195	1.09	2.75	213
1903.						
Mar. 19	O. P. Hall.....	--	337	---	4.75	833
May 15	M. R. Hall.....	--	301	---	3.95	551
July 30	O. P. Hall.....	--	237	---	3.42	372
Aug. 28	....do.....	--	216	---	2.88	267
Oct. 2	....do.....	--	188	---	2.62	183
Dec. 5	....do.....	--	199	---	2.68	204
1904.						
Mar. 1	O. P. Hall.....	--	236	1.58	3.40	373
May 14	....do.....	--	240	1.47	3.35	353
Aug. 30	....do.....	--	198	1.12	2.75	222
Oct. 7	....do.....	--	176	.69	2.30	121
Dec. 16	M. R. Hall.....	--	190	.97	2.58	184
1905.						
Apr. 17	O. P. Hall.....	70	248	1.70	3.48	421
June 20	....do.....	71	224	1.78	3.51	399
June 21	....do.....	72	268	2.01	3.98	538
Oct. 12	....do.....	69	226	1.40	3.22	315

DAILY GAGE HEIGHT, IN FEET, OF NOTTLEY RIVER AT RANGER, N. C., FOR 1901-1902.

1901.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)											
1.....		3.60	4.80	4.40	6.00	5.00	3.50	6.00	4.10	3.40	3.40
2.....		3.60	8.80	4.30	4.80	5.20	3.40	5.20	4.00	3.40	3.40
3.....		3.60	7.00	4.30	4.60	4.20	3.30	5.00	3.90	3.40	3.40
4.....		3.60	5.60	4.20	5.00	4.10	3.20	4.80	3.90	3.60	3.40
5.....		3.80	5.20	4.20	4.60	4.00	3.10	5.00	3.80	3.40	3.40
6.....		3.70	5.10	4.20	5.40	3.90	9.60	4.80	3.80	3.40	3.40
7.....		3.60	4.90	4.10	4.80	4.80	9.20	4.60	4.00	3.40	3.40
8.....		3.60	4.70	4.10	4.40	4.60	4.80	4.50	3.90	3.40	3.40
9.....		3.80	4.60	4.10	4.20	4.00	4.60	4.40	3.80	3.30	3.40
10.....		5.20	4.50	4.00	4.10	3.80	4.20	4.20	3.80	3.30	6.00
11.....		5.60	4.30	3.90	4.00	3.70	4.80	4.80	3.70	3.30	4.50
12.....		4.20	4.20	3.90	3.90	3.60	4.60	4.40	3.60	3.30	3.70
13.....		4.10	5.20	3.80	4.80	3.50	4.80	5.00	4.60	3.60	3.40
14.....		4.00	5.00	3.80	7.00	3.50	14.40	4.60	4.00	3.40	6.00
15.....		3.90	4.90	3.70	5.60	3.40	9.60	4.40	3.80	3.40	13.00
16.....	4.20	3.90	4.70	3.60	5.80	4.00	9.20	5.00	3.70	3.40	6.00
17.....	4.10	3.80	4.50	3.60	5.40	3.90	10.00	11.00	3.70	3.40	5.00
18.....	4.00	3.80	4.40	3.50	5.60	3.80	10.80	6.20	3.60	3.40	4.50
19.....	4.00	3.70	7.80	4.20	4.80	9.80	8.00	5.00	3.60	3.40	4.00
20.....	3.90	3.70	8.80	6.40	5.00	4.20	6.80	4.80	3.50	3.40	3.40
21.....	3.80	3.60	6.20	11.80	4.60	4.00	10.00	4.60	3.50	3.40	3.40
22.....	3.80	3.60	5.70	15.00	4.40	3.80	11.00	4.40	3.50	3.40	3.40
23.....	3.70	4.80	5.50	8.50	4.20	3.60	15.80	4.30	3.40	3.40	4.00
24.....	3.70	5.40	5.20	5.60	4.10	3.50	8.40	4.20	3.40	4.00	4.50
25.....	3.70	6.20	5.00	5.40	4.00	3.50	6.20	4.10	3.40	3.40	4.00
26.....	3.70	13.50	4.80	5.20	5.20	3.40	6.40	4.00	3.30	3.40	4.00
27.....	3.70	8.20	4.70	5.00	4.10	3.90	6.40	3.90	3.30	3.40	6.50
28.....	3.70	6.20	4.60	4.90	4.00	3.50	6.20	4.20	3.30	3.40	6.00
29.....		5.40	4.50	4.80	4.00	3.80	6.00	4.40	3.30	3.40	20.00
30.....		5.20	4.40	4.70	4.60	3.60	5.80	4.10	3.40	3.40	10.00
31.....		5.20		5.00		3.70	5.60		3.40		6.00

1902.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	5.50	7.00	9.00	5.00	4.10	3.40	3.00	2.80	2.60	2.90	2.30	3.30
2.....	5.00	7.00	7.20	5.00	4.00	3.30	2.90	2.80	2.60	2.90	2.60	3.50
3.....	5.00	9.10	6.10	5.00	4.00	3.30	2.90	3.00	3.00	2.70	2.60	6.20
4.....	4.50	7.80	6.00	5.00	4.00	3.20	2.80	2.80	3.30	2.70	2.60	4.30
5.....	4.80	5.50	6.30	5.10	4.00	3.20	2.80	2.80	2.80	2.70	2.50	4.40
6.....	4.40	5.00	5.80	5.00	4.00	3.20	2.80	2.80	2.60	2.60	2.50	4.30
7.....	4.40	4.90	5.40	4.80	4.00	3.10	2.80	2.60	2.60	2.60	4.00	4.30
8.....	4.40	4.90	5.30	4.20	3.70	3.80	2.80	2.60	2.50	2.50	4.00	3.00
9.....	4.40	4.50	5.20	5.00	3.70	3.60	2.70	2.60	2.70	2.80	2.80	3.00
10.....	4.30	4.30	5.10	5.00	3.70	3.30	3.00	2.60	2.90	2.70	2.80	3.80
11.....	4.20	4.20	5.10	5.00	3.70	3.20	3.00	3.80	2.60	3.00	2.70	3.50
12.....	4.20	4.10	5.00	4.80	3.60	3.10	3.70	3.60	2.50	2.70	2.70	3.40
13.....	4.00	4.00	6.20	4.40	3.60	3.10	4.40	2.60	3.40	2.90	2.70	3.40
14.....	3.80	4.00	5.00	4.40	4.70	3.10	3.60	2.60	3.00	3.30	2.50	3.30
15.....	3.40	4.00	5.00	4.40	4.60	3.10	4.80	2.60	2.80	3.50	2.50	3.30
16.....	3.40	4.10	6.20	4.40	3.80	3.00	4.30	2.60	2.80	3.00	2.50	5.40
17.....	3.20	4.00	5.20	4.60	3.70	3.00	4.00	2.60	2.70	2.90	2.40	4.60
18.....	3.00	4.00	5.80	4.50	3.70	3.00	3.00	2.60	2.70	2.70	3.70	4.60
19.....	4.00	4.00	5.60	4.40	3.70	3.00	3.00	2.60	3.30	2.90	3.20	3.80
20.....	4.00	4.00	5.00	4.20	3.60	3.00	3.00	2.60	3.00	2.80	3.00	3.70
21.....	4.00	4.10	5.00	4.00	3.60	3.30	2.80	2.40	3.00	2.80	2.90	5.40
22.....	4.00	5.00	4.90	4.10	3.50	3.10	2.80	2.40	2.80	2.70	2.80	5.20
23.....	3.80	4.50	4.80	4.10	3.40	3.00	2.80	2.40	2.60	2.70	2.80	4.40
24.....	3.80	4.40	4.70	4.10	3.30	3.00	2.80	2.50	2.60	2.70	2.70	3.80
25.....	3.80	4.80	4.60	4.10	3.30	3.00	2.70	2.50	2.90	2.60	5.30	3.60
26.....	3.80	4.60	4.60	4.00	3.30	3.60	2.70	2.70	2.70	2.50	4.40	3.50
27.....	4.00	4.80	4.70	4.00	3.30	3.60	2.70	3.00	2.60	2.50	3.70	3.60
28.....	4.40	21.00	4.70	4.00	3.30	3.00	2.70	2.80	3.10	2.50	3.10	3.40
29.....	4.50		13.80	4.20	3.40	3.00	2.80	2.80	3.00	2.40	3.00	5.20
30.....	5.00		6.80	4.30	3.40	3.00	2.80	2.70	3.00	2.40	3.00	5.00
31.....	6.30		5.20		3.40		2.80	2.70		2.80		3.40

DAILY GAGE HEIGHT, IN FEET, OF NOTTELY RIVER AT RANGER, N. C., FOR 1903-1904.

1903.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	3.20	3.20	8.80	6.40	4.20	6.00	3.80	7.00	2.80	2.60	2.70	2.50
2.....	3.20	3.50	6.30	6.10	4.40	7.00	3.70	4.40	2.80	2.50	2.70	2.50
3.....	3.00	3.60	5.80	5.70	4.30	6.00	3.60	3.70	2.70	2.50	2.80	2.50
4.....	4.00	9.60	5.40	5.80	4.20	6.40	3.90	3.60	2.70	2.50	2.90	2.50
5.....	3.80	6.00	5.00	5.30	4.20	7.40	3.60	3.50	2.70	2.60	2.90	2.60
6.....	3.70	4.80	4.90	5.20	4.10	7.00	3.60	3.40	2.90	2.60	2.90	2.60
7.....	3.70	6.00	5.00	5.10	4.00	7.50	3.70	3.30	2.80	2.60	2.90	2.60
8.....	3.60	7.60	5.20	5.00	4.00	5.00	3.70	3.20	2.80	4.00	2.90	2.50
9.....	3.60	5.40	6.70	7.00	4.00	5.00	3.80	3.00	3.20	2.80	2.80	2.50
10.....	3.80	4.90	6.20	6.50	4.90	4.90	4.00	3.10	2.90	2.70	2.80	2.50
11.....	3.80	7.60	11.00	5.80	3.90	5.20	3.90	3.40	2.80	2.70	2.70	2.50
12.....	4.80	7.00	7.60	5.00	3.90	5.20	5.00	3.30	2.80	2.70	3.00	2.50
13.....	3.80	5.40	6.20	8.60	3.90	5.00	5.80	3.20	2.70	2.60	2.80	2.50
14.....	3.90	5.00	5.00	8.00	3.90	4.00	5.00	4.00	2.70	2.60	2.70	2.50
15.....	3.70	4.70	5.40	6.60	3.90	4.00	4.00	4.00	2.70	2.80	2.60	2.50
16.....	3.60	4.70	5.10	5.80	3.90	4.00	3.90	3.70	2.70	2.80	2.60	2.50
17.....	3.50	8.00	5.10	5.70	3.90	3.80	4.40	3.30	4.00	2.90	2.80	2.60
18.....	3.60	5.60	5.00	5.50	3.80	3.80	3.70	3.40	3.20	2.80	4.00	2.60
19.....	3.50	5.20	4.90	5.40	3.80	3.80	3.60	3.40	2.90	2.70	3.00	2.70
20.....	3.40	5.00	4.70	5.20	3.80	3.70	4.70	3.30	2.80	2.70	2.80	3.50
21.....	3.40	4.70	7.00	5.00	4.00	3.70	4.00	3.00	2.90	2.70	2.80	3.40
22.....	3.30	4.70	8.00	5.20	3.70	3.60	3.50	3.00	2.80	2.70	2.80	3.40
23.....	3.30	4.60	14.80	4.80	3.50	3.50	3.40	3.20	2.80	2.60	2.70	3.80
24.....	3.30	4.40	8.00	4.70	3.50	3.50	3.30	3.00	2.70	2.60	2.70	3.70
25.....	3.40	4.40	6.20	4.60	3.60	3.50	3.00	3.00	2.70	2.60	2.70	3.60
26.....	3.40	4.30	6.10	4.70	3.60	5.00	3.10	2.90	2.70	2.60	2.60	3.50
27.....	3.30	4.50	5.60	4.70	3.60	5.00	3.10	2.90	2.70	2.60	2.60	3.40
28.....	3.40	17.50	5.20	4.60	3.70	4.70	3.10	2.90	2.70	2.50	2.60	3.20
29.....	3.60		5.00	4.50	3.90	4.00	3.00	2.90	2.60	2.50	2.60	3.10
30.....	3.70		6.40	4.30	5.50	3.80	3.00	2.90	2.60	2.70	2.50	3.00
31.....	3.00		7.70		5.70		4.00	2.80		2.70		2.80
1904.												
1.....	2.80	3.00	3.40	3.80	3.30	3.30	2.90	3.40	2.70	2.30	2.20	2.80
2.....	2.80	2.90	3.40	3.70	3.30	3.30	2.70	3.00	2.60	2.30	2.20	2.40
3.....	2.80	2.90	3.30	3.60	3.30	3.00	2.50	2.80	2.60	2.30	2.20	2.40
4.....	2.70	3.40	3.30	3.50	3.30	2.90	2.40	2.80	2.70	2.20	2.40	2.80
5.....	2.70	3.20	3.30	3.40	3.30	2.90	2.40	3.60	4.10	2.20	2.30	4.10
6.....	2.60	3.00	3.20	3.30	3.20	2.80	2.90	3.00	3.00	2.20	2.30	3.60
7.....	2.80	3.00	8.30	4.20	3.20	7.30	2.70	2.80	2.80	2.20	2.30	3.10
8.....	2.70	4.50	5.10	5.60	3.30	4.70	2.70	5.00	2.70	2.20	2.30	3.00
9.....	2.70	3.60	4.50	5.00	4.60	3.70	3.00	3.50	2.60	2.20	2.30	2.90
10.....	2.60	3.20	4.00	4.50	3.90	3.00	2.80	3.10	2.50	2.20	2.30	2.80
11.....	2.60	3.30	4.00	4.00	3.70	2.90	2.60	4.00	2.60	2.20	2.30	2.80
12.....	2.60	3.30	3.80	3.80	3.40	3.00	3.10	3.80	2.60	2.20	2.30	2.80
13.....	2.50	3.10	3.30	3.70	3.40	2.90	2.20	3.40	2.50	2.20	2.40	2.70
14.....	2.50	3.00	4.40	3.60	3.30	2.70	2.70	2.90	2.50	2.20	2.40	2.60
15.....	2.70	3.30	4.00	3.60	3.30	2.70	2.60	3.90	2.40	2.20	2.40	3.00
16.....	2.80	3.10	3.70	3.50	3.10	2.70	2.40	3.10	2.30	2.20	2.40	2.90
17.....	4.00	3.00	3.70	3.40	3.10	2.70	2.60	2.90	2.30	2.20	2.40	2.80
18.....	3.20	3.00	3.70	3.50	3.10	2.70	2.60	2.70	2.30	2.20	2.30	2.70
19.....	3.80	3.00	3.60	3.50	3.10	2.60	2.50	2.70	2.30	2.20	2.30	2.70
20.....	3.00	4.80	3.40	3.50	3.10	2.70	2.40	2.70	2.30	2.20	2.30	2.70
21.....	3.00	3.80	3.30	3.40	3.00	2.90	2.40	2.70	2.20	2.20	2.30	2.70
22.....	3.00	5.60	5.40	3.40	3.00	3.00	4.20	2.70	2.20	2.20	2.30	2.60
23.....	5.00	5.00	6.70	3.40	3.00	2.80	2.80	2.60	2.20	2.20	2.30	2.50
24.....	4.00	4.30	6.40	3.30	2.90	2.70	2.60	3.50	3.00	2.20	2.20	2.70
25.....	3.80	3.80	5.20	3.30	3.00	2.70	3.10	2.90	2.60	2.20	2.20	2.80
26.....	3.40	3.70	5.10	3.80	2.90	2.70	2.80	2.80	2.30	2.20	2.20	2.80
27.....	3.20	3.60	5.00	3.70	2.90	2.80	2.60	2.70	2.30	2.20	2.20	2.80
28.....	3.00	3.50	4.50	3.70	2.90	3.20	2.80	3.20	2.30	2.20	2.20	4.70
29.....	3.00	3.30	4.10	3.40	2.90	4.60	2.60	2.70	2.30	2.20	2.20	3.40
30.....	3.00		4.00	3.40	5.40	3.20	2.60	2.70	2.30	2.20	3.00	3.10
31.....	2.80		3.90		3.80		2.60	2.70		2.20		3.00

DAILY GAGE HEIGHT, IN FEET, OF NOTTLEY RIVER AT RANGER, N. C., FOR 1903.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	3 00	2 90	3 70	3 30	3 90	3 50	3 90	2 70	3 40	2 30	2 60	2 60
2.....	2 90	2 90	3 60	3 30	3 80	3 30	4 10	2 70	3 10	2 30	2 60	2 70
3.....	3 50	2 90	3 60	3 30	3 70	3 50	3 60	2 70	3 00	2 50	2 70	11 50
4.....	3 10	3 00	3 60	3 20	3 60	3 40	3 40	2 70	3 00	3 00	2 70	4 80
5.....	3 10	2 90	3 60	3 40	3 50	3 30	3 10	2 70	2 90	3 00	2 70	3 20
6.....	3 10	4 00	3 50	3 50	5 80	3 20	4 20	2 60	2 90	3 00	2 60	2 90
7.....	3 00	3 90	3 50	3 60	5 60	3 20	4 10	2 90	2 90	2 90	2 60	2 70
8.....	3 50	5 40	3 50	3 50	5 20	3 20	3 90	2 70	2 50	2 50	2 60	9 90
9.....	3 10	10 20	3 40	3 50	4 90	3 10	3 10	3 10	2 60	2 50	2 60	7 20
10.....	3 00	5 20	4 70	3 40	4 20	3 00	3 00	3 90	2 40	2 40	2 60	5 80
11.....	2 90	4 30	4 10	3 40	4 00	3 00	4 50	3 90	2 40	6 60	2 60	4 20
12.....	11 40	4 20	3 80	2 90	3 80	3 00	9 00	4 00	2 60	3 90	2 60	4 00
13.....	7 20	5 90	3 90	3 70	3 70	3 00	5 00	4 20	2 50	3 20	2 50	4 00
14.....	5 30	4 60	3 60	3 60	3 50	3 00	4 10	3 90	2 50	2 90	2 50	3 90
15.....	5 10	4 20	3 50	3 50	3 50	3 10	3 90	3 40	2 40	2 50	2 50	3 90
16.....	4 50	4 00	3 50	3 90	6 60	3 10	3 30	3 30	2 40	2 50	2 40	3 40
17.....	4 50	3 80	3 50	3 50	4 90	3 20	3 50	3 30	2 40	2 50	2 40	3 50
18.....	3 40	3 60	3 40	3 40	4 20	3 00	3 30	3 20	2 40	2 60	2 30	3 50
19.....	3 30	3 70	3 40	3 40	3 90	3 30	3 20	3 00	2 40	2 60	2 30	3 40
20.....	3 30	4 00	3 50	3 40	3 80	3 40	3 40	3 00	2 30	2 60	2 30	4 60
21.....	3 30	7 80	7 50	3 40	3 60	4 00	3 30	2 90	2 30	2 60	2 30	5 90
22.....	3 20	5 20	4 80	3 50	3 40	3 90	3 20	2 80	2 30	2 60	2 40	5 10
23.....	3 20	5 00	4 40	3 40	5 30	5 00	3 00	2 80	2 30	2 50	2 40	5 00
24.....	3 10	4 70	4 20	3 30	5 00	3 60	3 00	2 80	2 40	2 50	2 40	5 40
25.....	3 00	4 60	3 70	3 30	4 70	3 40	2 90	2 70	2 40	2 50	2 30	5 20
26.....	3 00	4 40	3 60	3 40	4 30	3 40	2 80	2 60	2 40	3 20	2 40	4 90
27.....	3 00	3 90	3 60	4 40	4 00	3 30	2 70	2 60	2 30	2 80	2 50	4 70
28.....	2 90	3 80	3 50	3 80	3 90	3 30	2 80	2 70	2 30	2 70	2 50	4 60
29.....	3 40	.....	3 40	3 90	3 80	3 40	3 00	2 70	2 30	2 70	2 70	4 20
30.....	3 10	.....	3 40	4 60	3 60	3 20	3 00	2 60	2 30	2 60	2 70	4 00
31.....	2 90	.....	3 40	.....	4 00	.....	2 80	2 60	.....	2 60	.....	3 50

RATING TABLE FOR NOTTLEY RIVER AT RANGER, N. C., FOR 1901-1903.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
2.4	155	5.2	920	8.0	1,760	12.0	2,960
2.6	190	5.4	980	8.2	1,820	12.5	3,110
2.8	229	5.6	1,040	8.4	1,880	13.0	3,260
3.0	272	5.8	1,100	8.6	1,940	13.5	3,410
3.2	322	6.0	1,160	8.8	2,000	14.0	3,560
3.4	380	6.2	1,220	9.0	2,060	14.5	3,710
3.6	440	6.4	1,280	9.2	2,120	15.0	3,860
3.8	500	6.6	1,340	9.4	2,180	15.5	4,010
4.0	560	6.8	1,400	9.6	2,240	16.0	4,160
4.2	620	7.0	1,460	9.8	2,300	17.0	4,460
4.4	680	7.2	1,520	10.0	2,360	18.0	4,760
4.6	740	7.4	1,580	10.5	2,510	19.0	5,060
4.8	800	7.6	1,640	11.0	2,660	20.0	5,360
5.0	860	7.8	1,700	11.5	2,910	21.0	5,660

RATING TABLE FOR NOTTELY RIVER AT RANGER, N. C., FOR 1904 AND 1905.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
2.2	101	3.1	295	4.0	560	4.9	848
2.3	120	3.2	320	4.1	592	5.0	880
2.4	141	3.3	346	4.2	624	5.2	944
2.5	162	3.4	373	4.3	656	5.4	1,008
2.6	184	3.5	402	4.4	688	5.6	1,072
2.7	206	3.6	432	4.5	720	5.8	1,136
2.8	228	3.7	464	4.6	752	6.0	1,200
2.9	250	3.8	496	4.7	784	7.0	1,520
3.0	272	3.9	528	4.8	816		

NOTE.—The above table is based on 22 discharge measurements made during 1901-1905. It is well defined between gage heights 2.25 feet and 3.5 feet. The table has been extended beyond these limits. Above gage height 3.6 feet the rating curve is a tangent, the difference being 32 per tenth.

ESTIMATED MONTHLY DISCHARGE OF NOTTELY RIVER AT RANGER, N. C.

[Drainage area, 272 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maxi-mum.	Mini-mum.	Mean.	Second-feet per Square Mile.	Depth in Inches.
1901.					
February 16-28.....	.....	.....	514	1.89	0.91
March.....	3,410	440	774	2.85	3.29
April.....	2,000	620	956	3.51	3.92
May.....	3,860	410	894	3.29	3.79
June.....	1,460	530	790	2.90	3.24
July.....	2,300	380	639	2.35	2.71
August.....	4,100	290	1,486	5.46	6.29
September.....	2,660	530	823	3.03	3.38
October.....	590	350	463	1.70	1.96
November.....	560	350	396	1.42	1.58
December.....	5,360	380	927	3.41	3.93
1902.					
January.....	1,250	272	631	2.32	2.67
February.....	5,660	560	1,006	3.70	3.85
March.....	3,500	740	1,095	4.03	4.64
April.....	890	560	711	2.61	2.91
May.....	770	350	475	1.75	2.02
June.....	500	272	322	1.18	1.32
July.....	800	209	307	1.13	1.30
August.....	500	155	219	.81	.93
September.....	380	172	237	.87	.97
October.....	410	148	221	.81	.93
November.....	950	148	295	1.08	1.20
December.....	1,220	272	576	2.12	2.44
The year.....	5,660	148	508	1.87	25.18



ESTIMATED MONTHLY DISCHARGE OF NOTTELY RIVER AT RANGER, N. C.—*Continued.*  
 [Drainage area, 272 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maxi- mum.	Mini- mum.	Mean.	Second- feet per Square Mile.	Depth in Inches.
1903.					
January.....	800	272	433	1.59	1.83
February.....	4,610	322	1,095	4.03	4.20
March.....	3,800	770	1,289	4.74	5.46
April.....	1,040	650	1,028	3.78	4.22
May.....	1,070	410	572	2.10	2.42
June.....	1,610	410	810	2.98	3.32
July.....	1,100	272	503	1.95	2.13
August.....	1,460	229	389	1.43	1.65
September.....	560	190	238	.88	.98
October.....	560	172	212	.78	.90
November.....	560	172	232	.85	.95
December.....	500	172	254	.93	1.07
The year.....	4,610	172	588	2.16	29.13
1904.					
January.....	880	162	293	1.06	1.24
February.....	1,072	250	423	1.56	1.68
March.....	1,936	320	656	2.41	2.78
April.....	1,072	346	472	1.74	1.94
May.....	1,008	250	362	1.33	1.53
June.....	1,616	184	334	1.23	1.37
July.....	624	101	210	.772	.890
August.....	880	184	310	1.14	1.31
September.....	592	101	174	.640	.714
October.....	120	101	103	.379	.437
November.....	272	101	124	.456	.509
December.....	784	141	264	.971	1.12
The year.....	1,936	101	310	1.14	15.52
1905.					
January.....	2,992	250	501	1.84	2.12
February.....	2,544	250	716	2.63	2.74
March.....	1,680	373	506	1.86	2.14
April.....	752	320	420	1.54	1.72
May.....	1,392	373	640	2.35	2.71
June.....	880	272	364	1.34	1.50
July.....	2,160	206	455	1.67	1.92
August.....	624	194	288	1.06	1.22
September.....	373	120	174	.640	.714
October.....	1,392	120	247	.908	1.05
November.....	206	120	165	.607	.677
December.....	3,056	184	780	2.87	3.31
The year.....	3,056	120	438	1.61	21.82

## VALLEY RIVER AT TOMOTLA, N. C.

This station was established June 29, 1904, by M. R. Hall. It is located at a footbridge about 250 feet below a public-road ford at Tomotla, N. C., and 5 miles above Murphy, N. C.

The channel is straight for about 500 feet above and 1,000 feet below the station. The current is moderately swift. Both banks are high and

rocky and are not liable to overflow. The bed of the stream is composed of rock, but there is a fairly smooth and permanent section. There is but one channel at all stages.

Discharge measurements are made from the single-span footbridge, the floor of which is 10 to 15 feet above low water. The initial point for soundings is the upstream edge of the abutment, next to the water on the right bank. The gage is at the right end of the footbridge. The lower 5.4 feet consists of a sloping section bolted to solid rock. The upper end is vertical and is fastened to the bridge abutment. A bench mark, consisting of a circle cut in solid rock under the right bank end of the footbridge, has an elevation of 4.5 feet above the zero of the gage.

## DISCHARGE MEASUREMENTS OF VALLEY RIVER AT TOMOTLA, N. C., IN 1904-1907.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1904.						
Dec. 15	M. R. Hall.....	55	101	....	1.10	69
1905.						
Apr. 17	Olin P. Hall.....	58	150	....	1.79	204
June 16	M. R. Hall.....	55	125	....	1.42	125
June 16	O. P. Hall.....	56	125	....	1.42	118
Oct. 13	.....do.....	55	110	....	1.20	78
1906.						
Feb. ..	O. P. Hall.....	59	154	....	1.75	217
Apr. 12	M. R. Hall.....	60	195	....	2.42	426
Apr. 12	O. P. Hall.....	60	195	....	2.43	423
June 8	.....do.....	58	140	....	1.54	175
Nov. 5	.....do.....	58	138	....	1.57	171
1907.						
May 18	F. A. Murray.....	58	145	1.57	1.89	228
Aug. 20	.....do.....	56	118	1.11	1.38	131
Aug. 20	F. P. Thomas.....	55	118	1.39	1.39	163
Oct. 15	Olin P. Hall.....	56	115	.97	1.23	111

## DAILY GAGE HEIGHT, IN FEET, OF VALLEY RIVER AT TOMOTLA, N. C., FOR 1904.

Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	1.10	1.30	1.10	0.90	0.70	1.70	17.....	1.00	1.40	0.95	0.80	0.90	1.30
2.....	1.00	1.10	1.10	.90	.70	1.70	18.....	1.00	1.30	.95	.80	.90	1.20
3.....	.95	1.10	1.10	.90	.90	2.40	19.....	.95	1.20	.95	.75	.90	1.20
4.....	1.00	1.10	1.10	.90	.90	1.60	20.....	.95	1.20	.95	.75	1.00	1.20
5.....	1.20	1.10	1.10	.90	1.00	2.10	21.....	1.00	1.20	.95	.75	1.00	1.20
6.....	1.00	1.40	1.10	.90	1.00	2.00	22.....	1.40	1.20	.90	.75	1.00	1.20
7.....	1.00	1.10	1.10	.90	.90	1.80	23.....	1.10	2.00	.90	.75	1.00	1.20
8.....	1.00	1.40	1.10	.85	.90	1.60	24.....	1.10	1.40	.90	.75	1.00	1.90
9.....	1.30	1.20	1.00	.85	.90	1.60	25.....	1.10	1.30	.90	.75	1.00	1.60
10.....	1.10	1.20	1.00	.85	.90	1.60	26.....	1.10	1.30	.90	.75	1.00	1.50
11.....	1.00	1.20	1.00	.85	.90	1.60	27.....	1.00	1.30	.90	.75	1.00	2.20
12.....	1.20	1.10	1.00	.85	1.00	1.50	28.....	1.20	1.30	.90	.70	1.00	2.60
13.....	1.00	1.10	1.00	.80	1.00	1.50	29.....	1.00	1.20	.90	.70	1.00	2.00
14.....	1.00	1.10	.95	.80	1.00	1.40	30.....	1.00	1.20	.90	.70	2.30	1.60
15.....	.95	4.00	.95	.80	.90	1.30	31.....	1.00	1.10	.....	.70	.....	1.60
16.....	.95	2.00	.95	.80	.90	1.20							

## DAILY GAGE HEIGHT, IN FEET, OF VALLEY RIVER AT TOMOTLA, N. C., FOR 1905-1906.

1905.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	1.40	1.30	2.10	1.85	2.45	1.75	2.30	1.40	1.50	1.05	1.15	1.45
2.....	1.40	1.40	2.10	1.85	2.25	1.65	2.20	1.40	1.40	1.05	1.05	1.60
3.....	1.40	1.40	2.00	1.85	2.05	1.65	1.80	1.30	1.40	1.55	1.05	7.75
4.....	1.40	1.50	1.90	1.75	1.95	1.55	1.80	1.30	1.40	1.35	1.05	3.55
5.....	1.50	1.70	1.90	1.75	1.85	1.55	1.60	1.30	1.40	1.25	1.05	2.65
6.....	1.90	2.40	1.90	1.85	1.85	1.45	2.00	1.30	1.20	1.15	1.05	2.35
7.....	1.90	2.10	1.80	1.85	2.15	1.45	1.80	1.40	1.30	1.15	1.25	1.95
8.....	1.70	3.10	1.80	2.05	2.05	1.45	1.60	1.80	1.30	1.15	1.15	3.35
9.....	1.50	7.90	2.60	2.35	1.95	1.35	1.60	1.50	1.30	1.15	1.15	4.55
10.....	1.60	3.70	2.60	2.05	1.95	1.35	1.80	2.00	1.30	1.35	1.15	2.75
11.....	1.80	2.90	2.50	1.85	1.85	1.35	2.10	1.80	1.30	2.55	1.15	2.45
12.....	7.50	2.90	2.30	2.45	1.85	1.25	9.60	2.30	1.20	1.75	1.15	2.35
13.....	3.70	3.90	2.20	2.05	1.85	1.25	4.20	2.60	1.20	1.35	1.15	2.35
14.....	2.70	3.30	2.10	1.95	1.85	1.35	2.60	3.20	1.20	1.15	1.05	2.25
15.....	2.50	2.70	2.00	1.85	2.15	1.35	2.40	2.10	1.20	1.15	1.05	2.35
16.....	2.10	2.60	2.00	2.15	3.15	1.35	2.20	2.80	1.20	1.15	1.05	2.35
17.....	1.90	2.40	1.90	1.85	2.45	1.35	2.40	2.20	1.20	1.15	1.05	2.25
18.....	1.70	2.20	1.85	1.85	2.25	1.35	2.20	1.80	1.20	1.05	1.05	2.15
19.....	1.70	2.70	1.80	1.85	2.05	1.35	2.10	1.60	1.20	1.25	1.15	2.15
20.....	1.60	7.60	2.20	1.75	1.95	1.35	2.00	1.60	1.20	1.15	1.55	2.15
21.....	1.60	5.40	3.40	1.75	2.05	1.45	1.80	1.50	1.10	1.15	1.35	2.75
22.....	1.60	3.90	2.50	1.95	2.05	1.45	1.80	1.60	1.10	1.15	1.25	2.35
23.....	1.50	3.10	2.20	1.85	2.35	1.65	1.70	1.80	1.10	1.15	1.15	3.75
24.....	1.40	2.90	2.30	1.85	2.35	1.45	1.70	2.90	1.10	1.15	1.15	3.55
25.....	1.30	2.70	2.30	1.85	2.05	1.35	1.70	1.80	1.10	1.15	1.45	2.75
26.....	1.20	2.50	2.10	2.05	1.95	1.45	1.60	1.70	1.10	1.85	1.35	2.35
27.....	1.10	2.30	2.10	1.95	1.85	1.45	1.60	1.60	1.10	1.55	1.25	2.25
28.....	1.10	2.20	2.00	1.85	1.85	1.45	1.50	1.60	1.00	1.25	1.35	2.15
29.....	1.10		2.30	2.85	1.85	2.85	1.50	1.50	1.10	1.15	1.75	2.15
30.....	1.20		2.10	3.15	1.85	2.85	1.50	1.50	1.10	1.15	1.65	2.05
31.....	1.40		1.90		1.75		1.50	1.40		1.15		2.05
1906.												
1.....	1.85	2.25	1.85	2.40	1.95	1.35	1.70	2.10	1.90	3.00	1.70	2.10
2.....	1.95	2.15	1.95	2.20	1.90	2.50	1.70	3.20	1.80	3.00	1.70	2.10
3.....	4.60	2.15	3.20	2.10	1.85	1.50	1.65	2.60	1.80	3.00	1.70	2.00
4.....	4.80	2.05	2.35	2.30	2.30	1.50	1.60	2.40	1.80	2.80	1.65	2.00
5.....	3.10	2.05	2.15	2.80	2.00	1.40	1.70	2.10	1.75	3.00	1.65	2.10
6.....	2.75	2.05	2.05	2.40	2.00	1.40	1.70	2.20	2.90	6.00	1.60	2.80
7.....	2.45	1.95	2.05	2.10	2.00	1.35	1.90	2.30	2.60	4.00	1.55	2.40
8.....	2.25	1.95	2.25	2.20	1.90	1.30	1.70	2.10	2.10	3.40	1.55	2.10
9.....	2.15	1.85	2.05	4.60	1.90	1.30	1.60	2.10	2.00	3.00	1.50	2.10
10.....	2.15	1.85	1.95	3.40	1.85	1.25	1.60	2.00	1.90	2.60	1.50	2.80
11.....	2.15	1.85	1.85	2.80	1.80	1.25	1.55	2.00	1.80	2.40	1.50	2.60
12.....	2.35	1.85	1.85	2.60	1.80	2.00	1.55	2.00	1.75	2.20	1.60	2.40
13.....	2.25	1.75	1.95	2.40	1.75	2.00	1.50	2.00	1.70	2.10	1.60	2.30
14.....	2.25	1.75	2.45	2.40	1.75	2.50	4.80	2.00	1.60	2.05	1.70	2.20
15.....	2.25	1.75	3.80	2.40	1.70	4.40	4.00	2.10	1.50	2.00	1.80	2.30
16.....	2.25	1.65	2.85	2.30	1.65	3.20	3.00	1.90	1.60	2.00	1.80	2.50
17.....	2.35	1.65	2.45	2.30	1.60	3.00	3.60	1.90	2.60	2.10	1.80	4.10
18.....	2.45	1.65	2.25	2.25	1.55	2.40	4.50	1.80	2.40	2.80	4.50	3.30
19.....	2.35	1.65	3.40	2.25	1.55	2.20	3.30	1.90	2.00	2.40	17.30	3.60
20.....	2.25	1.75	3.10	2.20	1.50	2.00	3.00	2.10	2.10	2.20	6.00	3.00
21.....	2.25	2.25	2.65	2.20	1.50	2.50	2.40	2.00	2.30	2.10	4.00	2.90
22.....	2.35	1.95	2.45	2.10	1.45	2.00	2.20	1.90	2.30	2.00	3.60	2.80
23.....	5.60	1.75	2.25	2.05	1.45	2.00	2.20	1.80	3.20	2.00	3.20	2.60
24.....	4.20	1.75	2.15	2.05	1.40	3.00	2.10	1.80	2.80	1.90	3.00	2.60
25.....	3.40	1.65	2.05	2.00	1.40	2.40	2.00	1.75	2.40	1.90	2.90	2.50
26.....	2.65	1.65	2.05	2.00	1.60	2.00	1.90	1.80	2.30	1.80	2.80	2.50
27.....	2.65	1.85	2.15	2.00	1.50	1.90	2.40	3.00	2.40	1.80	2.70	2.80
28.....	2.45	1.85	2.45	2.30	1.45	1.80	2.00	2.60	2.60	1.75	2.60	4.00
29.....	2.45		2.45	2.10	1.45	1.80	1.80	2.20	2.80	1.75	2.50	4.00
30.....	2.35		3.80	2.00	1.40	1.60	2.50	2.00	5.00	1.70	2.40	3.60
31.....	2.25		3.40		1.40		2.20	1.90		1.70		3.80

DAILY GAGE HEIGHT, IN FEET, OF VALLEY RIVER AT TOMOTLA, N. C., FOR 1907-1908.

1907.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	3.60	3.00	3.30	2.10	1.90	3.40	1.90	1.50	1.30	1.60	1.20	1.60
2.....	3.20	2.90	4.00	2.10	1.90	3.20	1.75	1.40	1.35	1.50	1.55	1.60
3.....	3.10	2.80	3.80	1.80	1.80	2.40	1.70	1.40	1.40	1.45	1.35	1.55
4.....	3.00	2.60	3.70	1.80	2.00	2.00	1.65	1.30	1.40	1.40	1.30	1.50
5.....	3.00	4.10	3.70	1.70	1.90	1.80	1.60	1.80	1.35	1.70	1.20	1.50
6.....	2.80	3.80	3.00	2.50	1.80	1.80	1.60	1.45	1.30	1.40	1.20	1.50
7.....	2.70	3.60	2.80	2.50	2.30	1.70	1.55	1.40	1.30	1.40	1.20	1.40
8.....	2.65	3.20	2.50	2.00	2.00	2.00	1.50	1.30	1.30	1.60	1.20	1.60
9.....	2.60	3.00	2.80	2.00	1.90	1.90	1.50	1.25	1.30	1.40	1.20	2.45
10.....	2.55	2.70	3.50	1.90	1.90	1.80	1.40	1.20	1.25	1.30	2.75	2.00
11.....	2.50	2.60	3.40	2.00	3.50	1.90	1.55	1.20	1.45	1.30	2.55	1.80
12.....	2.50	2.50	3.30	1.90	2.50	2.40	2.10	1.20	1.25	1.30	2.00	1.80
13.....	2.40	2.40	3.00	1.80	2.00	2.20	2.60	1.25	1.20	1.25	1.70	1.75
14.....	2.40	2.30	2.80	1.80	1.90	1.80	1.90	1.35	1.10	1.20	1.60	2.55
15.....	2.35	2.10	2.40	2.00	2.50	1.80	1.85	1.65	1.10	1.20	1.50	2.40
16.....	2.30	2.00	2.30	1.90	2.30	1.80	1.65	1.60	1.10	1.20	1.50	2.15
17.....	2.40	2.00	2.20	1.90	2.00	1.70	1.60	1.70	1.10	1.20	1.50	2.10
18.....	2.40	1.95	2.15	1.80	1.90	1.70	1.65	1.80	1.10	1.20	1.65	2.00
19.....	2.35	1.90	2.10	1.90	1.90	1.80	1.60	1.55	1.10	1.20	1.55	1.90
20.....	2.70	1.90	2.10	1.90	1.80	1.80	1.60	1.40	1.10	1.20	1.50	1.80
21.....	2.60	1.90	2.00	2.00	1.80	1.70	1.55	1.40	1.20	1.15	1.90	1.70
22.....	2.55	2.00	2.00	2.00	1.70	1.70	1.50	1.90	2.00	1.10	1.90	1.70
23.....	2.50	2.00	2.00	3.00	1.70	2.00	1.70	2.05	4.00	1.10	3.40	2.35
24.....	2.50	2.10	1.95	2.90	1.70	1.90	1.40	1.85	2.10	1.20	3.50	2.20
25.....	2.45	2.20	1.90	2.80	1.70	2.00	1.65	1.60	1.35	1.10	2.65	2.10
26.....	2.40	2.10	2.10	2.30	2.50	1.80	1.60	1.40	1.30	1.15	2.05	2.00
27.....	2.40	2.00	1.90	2.20	2.00	1.80	1.50	1.35	1.30	1.45	1.95	1.90
28.....	2.50	2.20	1.85	2.10	1.90	1.70	1.45	1.40	1.85	1.50	1.85	1.90
29.....	2.55		1.80	2.00	1.80	2.50	1.70	1.40	2.15	1.20	1.80	2.00
30.....	2.60		1.75	2.00	1.70	1.90	2.20	1.30	1.65	1.20	1.75	5.40
31.....	2.70		2.10		2.70		1.85	1.30		1.20		3.50

1908.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Dec.
(Day)										
1.....	2.85	3.20	2.10	2.10	2.05	1.55	1.20	1.15	1.20	0.90
2.....	2.45	2.55	2.20	2.05	2.00	1.50	1.20	1.20	1.20	.90
3.....	2.25	2.35	2.25	2.00	1.95	1.50	1.35	1.20	1.25	.90
4.....	3.00	2.15	2.25	1.95	1.90	1.95	1.85	1.25	1.30	.90
5.....	3.60	2.10	2.25	2.10	2.00	1.65	1.60	1.30	1.75	.90
6.....	2.95	2.25	2.10	2.05	1.90	1.60	1.70	1.35	1.55	.90
7.....	2.75	2.10	2.05	2.10	2.85	1.60	1.45	1.90	1.00	.90
8.....	2.50	2.00	2.00	1.85	2.35	1.60	2.05	1.40	1.00	.90
9.....	2.30	2.00	2.00	1.80	2.15	1.50	1.65	1.25	1.00	.95
10.....	2.20	2.20	2.00	1.80	2.05	1.45	2.20	1.20	.90	1.35
11.....	3.00	2.20	3.20	1.80	1.95	1.40	1.65	1.25	.90	1.00
12.....	4.00	2.20	2.70	1.70	1.85	1.50	1.55	1.20	.90	1.00
13.....	2.80	2.20	2.50	1.70	1.80	1.60	1.50	1.10	.90	.90
14.....	2.55	2.30	2.45	1.70	1.80	1.60	1.40	1.10	.90	.90
15.....	2.65	5.90	2.30	2.45	1.70	1.50	1.45	1.10	.90	.90
16.....	2.55	3.40	2.15	2.45	1.70	1.50	1.45	1.10	.90	.90
17.....	2.55	2.95	2.05	2.75	1.70	1.50	1.45	1.25	.90	.90
18.....	2.40	2.60	2.05	2.55	1.80	1.95	1.30	1.10	.90	.90
19.....	2.30	2.60	3.20	2.50	2.00	1.65	1.30	1.05	.90	.90
20.....	2.20	2.45	2.50	2.25	1.80	1.60	1.25	1.00	.90	.90
21.....	2.15	2.30	2.50	2.15	1.65	1.40	1.20	1.10	.90	.90
22.....	2.15	2.20	2.50	2.05	1.60	1.30	1.20	1.75	.90	.90
23.....	2.10	2.10	4.80	2.00	1.60	1.30	1.20	2.05	.90	1.40
24.....	2.05	2.10	5.40	1.90	1.70	1.30	1.25	1.80	.90	1.15
25.....	1.90	2.10	4.60	3.30	1.85	1.30	1.25	1.35	.90	1.00
26.....	1.95	2.25	3.40	2.85	1.85	1.30	1.20	1.90	.90	1.00
27.....	2.05	2.10	2.60	2.60	1.85	1.30	1.20	1.80	.90	1.40
28.....	1.90	2.00	2.40	2.30	1.70	1.30	1.25	1.30	.90	1.40
29.....	1.90	2.00	2.30	2.15	1.60	1.20	1.30	1.25	.90	1.25
30.....	1.85		2.30	2.25	1.65	1.20	1.20	1.20	.90	1.10
31.....	2.00		2.20		1.60		1.20	1.20		1.00

RATING TABLE FOR VALLEY RIVER AT TOMOTLA, N. C., FROM JULY 1 TO DECEMBER 31, 1904.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
0.7	22	1.2	88	1.7	192	2.2	327
.8	32	1.3	106	1.8	217	2.3	357
.9	44	1.4	126	1.9	243	2.4	388
1.0	57	1.5	147	2.0	270	2.5	420
1.1	72	1.6	169	2.1	298	2.6	452

The above table is applicable only for open-channel conditions. It is based upon four discharge measurements made during 1904. It is fairly well defined between gage heights 0.70 foot and 1.75 feet. The table has been extended above gage height 1.75 feet to 2.60 feet.

RATING TABLE FOR VALLEY RIVER AT TOMOTLA, N. C., FOR 1905.

1.00	50	1.90	230	2.80	530	3.70	960
1.10	66	2.00	260	2.90	570	3.80	1,015
1.20	82	2.10	290	3.00	610	3.90	1,075
1.30	100	2.20	320	3.10	655	4.00	1,135
1.40	118	2.30	350	3.20	700	4.20	1,260
1.50	138	2.40	380	3.30	750	4.40	1,390
1.60	158	2.50	415	3.40	800	4.60	1,520
1.70	180	2.60	450	3.50	850	4.80	1,660
1.80	205	2.70	490	3.60	905	5.00	1,800

This table is applicable only for open-channel conditions. It is based on four discharge measurements made during 1905. It is well defined between gage heights 1.0 foot and 2.0 feet. Above gage height 4.6 feet the rating curve is a tangent, the difference being 70 per tenth.

RATING TABLE FOR VALLEY RIVER AT TOMOTLA, N. C., FOR 1907.

1.10	74	2.00	285	2.90	595	.....	.....
1.20	92	2.10	315	3.00	635	3.80	1,040
1.30	112	2.20	345	3.10	680	3.90	1,100
1.40	134	2.30	375	3.20	725	4.00	1,160
1.50	156	2.40	405	3.30	775	4.20	1,285
1.60	180	2.50	440	3.40	825	4.40	1,415
1.70	205	2.60	475	3.50	875	4.60	1,545
1.80	230	2.70	515	3.60	930	4.80	1,680
1.90	255	2.80	555	3.70	985	5.00	1,820

This table is applicable only for open-channel conditions. It is based on five discharge measurements made during 1906. It is well defined between gage heights 1.2 feet and 3.0 feet. Above gage height 4.7 feet the rating curve is a tangent, the difference being 70 per tenth.

ESTIMATED MONTHLY DISCHARGE OF VALLEY RIVER AT TOMOTLA, N. C., FOR 1904.

Month.	Discharge in Second-feet.		
	Maxi-mum.	Mini-mum.	Mean.
July.....	126	50	65.6
August.....	1,000	72	13.3
September.....	72	44	55.2
October.....	44	22	32.9
November.....	357	22	59.5
December.....	452	88	19.1

## ESTIMATED MONTHLY DISCHARGE OF VALLEY RIVER AT TOMOTLA, N. C.—Continued.

[Drainage area, 106 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maximum.	Minimum.	Mean.	Second-feet per Square Mile.	Depth in Inches.
1905.					
January.....	3,550	66	302	2.85	3.29
February.....	3,830	100	766	7.23	7.53
March.....	800	205	314	2.96	3.41
April.....	678	192	265	2.50	2.79
May.....	678	192	282	2.66	3.07
June.....	550	91	154	1.45	1.62
July.....	5,020	138	420	3.96	4.56
August.....	700	100	222	2.09	2.41
September.....	138	50	86.4	.815	.91
October.....	432	58	102	.962	1.11
November.....	192	58	85.2	.804	.90
December.....	3,720	128	559	5.27	6.08
The year.....	5,020	50	296	2.80	37.68
1906.					
January.....	2,240	242	574	5.42	6.25
February.....	360	192	250	2.36	2.46
March.....	1,040	242	446	4.21	4.85
April.....	1,540	285	419	3.95	4.41
May.....	375	134	204	1.92	2.21
June.....	1,420	102	325	3.07	3.42
July.....	1,680	156	434	4.09	4.72
August.....	725	217	325	3.07	3.54
September.....	1,820	156	393	3.71	4.14
October.....	2,520	205	483	4.56	5.26
November.....	10,400	156	803	7.58	8.46
December.....	1,220	285	562	5.30	6.11
The year.....	10,400	102	435	4.10	55.83
1907.					
January.....	930	375	490	4.62	5.33
February.....	1,220	255	468	4.42	4.60
March.....	1,160	218	511	4.82	5.56
April.....	635	205	316	2.98	3.32
May.....	875	205	302	2.85	3.29
June.....	825	205	294	2.77	3.09
July.....	475	134	205	1.93	2.22
August.....	300	92	153	1.44	1.66
September.....	1,160	74	167	1.58	1.76
October.....	205	74	114	1.08	1.24
November.....	875	92	252	2.38	2.66
December.....	2,100	134	338	3.19	3.68
The year.....	2,100	74	301	2.84	38.41

NOTE.—Values for 1905 and 1906 can be considered only fair, owing to discrepancies between the gage readings, probably due to daily fluctuations from stored water.

## TUSQUITEE CREEK NEAR HAYESVILLE, N. C.

This station was established on May 20, 1907. It is at the wagon bridge, about 3 miles northeast of Hayesville, and  $2\frac{1}{2}$  miles above the mouth of the creek, which is a tributary of the Hiwassee River.

The vertical gage is attached to the left bank bridge abutment.

Discharge measurements are made from the wooden wagon bridge. The current is somewhat rough, but is fairly good for measurements, and the bottom of the stream is rocky and will not be liable to change.

## DISCHARGE MEASUREMENTS OF TUSQUITEE CREEK NEAR HAYESVILLE, N. C., IN 1907.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
May 20	F. A. Murray	34	66	1.73	1.50	114
Aug. 21	Frank P. Thomas	37	70	2.16	1.73	151
Aug. 21	F. A. Murray	35	65	2.21	1.72	144
Oct. 14	Olin P. Hall	27	49	1.12	1.22	55

## DAILY GAGE HEIGHT, IN FEET, OF TUSQUITEE CREEK NEAR HAYESVILLE, N. C., FOR 1907.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....		3.00	1.40	1.50	1.30	1.60	1.20	1.45
2.....		2.50	1.40	1.40	1.30	1.50	1.95	1.40
3.....		2.00	1.40	1.40	1.35	1.45	1.50	1.40
4.....		1.85	1.35	1.30	1.35	1.45	1.40	1.35
5.....		1.80	1.30	1.30	1.30	1.50	1.35	1.35
6.....		1.70	1.35	1.50	1.25	1.40	1.35	1.35
7.....		1.70	1.30	1.30	1.25	1.40	1.30	1.35
8.....		2.00	1.30	1.30	1.25	1.40	1.30	1.35
9.....		1.80	1.35	1.30	1.30	1.35	1.25	1.40
10.....		1.70	1.30	1.30	1.65	1.30	2.25	2.00
11.....		1.70	1.40	1.25	1.40	1.30	1.70	2.10
12.....		1.65	1.50	1.40	1.25	1.25	1.60	1.80
13.....		1.60	2.00	1.30	1.20	1.25	1.50	1.50
14.....		1.60	1.50	1.40	1.20	1.25	1.45	1.60
15.....		1.50	1.50	1.30	1.20	1.20	1.40	1.60
16.....		1.50	1.50	1.80	1.20	1.20	1.35	1.60
17.....		1.50	1.50	1.60	1.20	1.20	1.35	1.55
18.....		1.50	1.45	2.10	1.20	1.20	1.65	1.50
19.....		1.50	1.60	1.70	1.20	1.20	1.45	1.50
20.....	1.50	1.55	1.55	1.60	1.15	1.15	1.40	1.50
21.....	1.50	1.50	1.40	1.80	1.15	1.15	1.50	1.45
22.....	1.50	1.50	1.40	2.00	2.85	1.15	1.70	1.45
23.....	1.40	1.40	1.40	1.85	2.40	1.20	1.90	1.70
24.....	1.40	1.45	1.35	1.75	1.55	1.20	2.20	1.70
25.....	1.50	1.45	1.30	1.70	1.40	1.20	1.90	1.65
26.....	2.60	1.55	1.30	1.60	1.35	1.20	1.80	1.60
27.....	1.85	1.40	1.35	1.50	1.30	1.55	1.70	1.60
28.....	1.70	1.40	1.35	1.50	2.50	1.35	1.60	1.70
29.....	1.60	1.50	3.40	1.40	2.10	1.30	1.55	1.60
30.....	1.65	1.45	2.00	1.35	1.75	1.25	1.50	3.00
31.....	2.40		1.60	1.30		1.20		2.20

DAILY GAGE HEIGHT, IN FEET, OF TUSQUITEE CREEK NEAR HAYESVILLE, N. C., FOR 1908.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1.....	2.00	1.85	1.60	1.80	1.80	1.75	1.25	1.15	1.25	1.10
2.....	1.85	1.75	1.80	1.75	1.75	1.65	1.70	1.15	1.20	1.00
3.....	1.75	1.65	1.70	1.70	1.70	1.60	1.40	1.10	1.15	1.00
4.....	2.35	1.60	1.70	1.70	1.65	1.70	1.50	1.10	1.15	1.00
5.....	2.30	1.60	1.70	1.65	1.65	2.05	1.50	1.20	1.15	1.00
6.....	2.10	1.70	1.65	1.70	1.70	1.80	1.45	1.60	1.50	1.00
7.....	2.00	1.60	1.65	1.65	2.10	1.70	1.40	1.20	1.35	1.00
8.....	1.85	1.60	1.60	1.60	1.95	1.60	1.40	1.25	1.30	1.00
9.....	1.80	1.55	1.60	1.60	1.85	1.60	1.40	1.30	1.25	1.20
10.....	1.80	1.70	1.60	1.60	1.80	1.55	1.95	1.20	1.20	1.20
11.....	1.70	1.65	2.30	1.55	1.75	1.55	1.55	1.20	1.20	1.15
12.....	2.30	1.65	2.25	1.50	1.70	1.50	1.45	1.20	1.15	1.10
13.....	2.10	1.70	2.00	1.50	1.65	1.50	1.40	1.10	1.15	1.10
14.....	2.00	2.20	1.90	1.50	1.60	1.80	1.35	1.10	1.15	1.10
15.....	1.90	2.80	1.80	2.00	1.60	1.55	1.35	1.10	1.10	1.10
16.....	1.90	2.30	1.75	1.80	1.55	1.50	1.35	1.10	1.10	1.10
17.....	1.85	2.25	1.70	1.75	1.50	1.45	1.35	1.10	1.10	1.05
18.....	1.80	2.00	1.70	1.75	2.15	1.40	1.30	1.15	1.10	1.05
19.....	1.80	1.90	1.65	1.95	1.80	1.40	1.50	1.50	1.05	1.00
20.....	1.75	1.80	2.15	1.80	1.70	1.40	1.40	1.20	1.05	1.00
21.....	1.70	1.80	2.10	1.75	1.65	1.40	1.30	1.60	1.10	1.00
22.....	1.70	1.75	1.80	1.70	1.60	1.35	1.25	1.65	1.10	1.00
23.....	1.70	1.70	3.70	1.65	1.55	1.35	1.25	1.60	1.10	1.40
24.....	1.60	1.60	3.40	1.60	1.50	1.35	1.20	1.50	1.10	1.20
25.....	1.60	1.60	3.60	3.10	1.90	1.35	1.20	1.80	1.05	1.15
26.....	1.75	1.70	2.30	2.20	1.70	1.30	1.20	1.55	1.05	1.10
27.....	1.80	1.65	2.10	2.10	1.65	1.30	1.20	1.50	1.15	1.10
28.....	1.65	1.60	2.00	2.00	1.70	1.30	1.60	1.35	1.15	1.25
29.....	1.60	1.60	1.90	1.90	3.55	1.30	1.25	1.30	1.10	1.50
30.....	1.60	.....	1.85	1.85	2.30	1.25	1.20	1.30	1.10	1.20
31.....	1.55	.....	1.80	.....	1.85	.....	1.20	1.25	.....	1.10

RATING TABLE FOR TUSQUITEE CREEK NEAR HAYESVILLE, N. C., FOR 1907 AND 1908.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.00	30	1.30	68	1.60	120	1.90	180
1.05	35	1.35	76	1.65	130	1.95	190
1.10	40	1.40	84	1.70	140	2.00	200
1.15	46	1.45	93	1.75	150		
1.20	53	1.50	102	1.80	160		
1.25	60	1.55	111	1.85	170		

## LITTLE TENNESSEE RIVER AT MCGHEE, TENN.

This station was established in 1904 by the United States Weather Bureau. It is located at the Louisville and Nashville Railroad bridge, about one-third of a mile south of McGhee Station, Tenn. During 1905 discharge measurements have been made by the Geological Survey, and gage-height records have been furnished by the Weather Bureau.

The channel is practically straight for 2,000 feet above the station and is only slightly curved for the same distance below. The section is about 530 feet wide at ordinary stages, but at low water the width is considerably less. The current is very swift even at low water and is somewhat broken at places, partly owing to temporary obstruction. It is fairly good for measuring purposes.



Discharge measurements are made from the new nine-span railway bridge, which has a total length of about 973 feet. Four truss spans are each 140 feet long and five girder spans are each 82.5 feet long, three of the latter being on the right bank and two on the left bank.

A standard chain gage, which is the property of the Weather Bureau, was located on the upstream side of the old bridge near the right bank, but during 1905 a new location of the railroad was made, requiring a new crossing of the river about 1,000 feet above the old one. The old bridge was taken down and the gage moved to the new bridge December 1, 1905, and set to agree with the old gage when the latter read 3.95 feet. The gage is located on the upstream side of the bridge at the third floor beam from the right-bank end of the truss bridge, resting on the cross-ties outside the guard rail; length of chain, 54.13 feet. The slope of the water surface between the two points was 0.30 foot, so that the new datum for the gage was made 0.30 foot higher than the former datum and the elevations of the bench marks reduced by that amount. The bench marks are as follows: (1) The top of the upstream end of the third floor beam from the right-bank end of the main bridge; elevation, 52.93 feet. (2) The under surface at the middle point of the projecting cap on the downstream side of the concrete pier supporting the left end of the first girder span on the right bank; elevation, 39.90 feet. Elevations refer to the datum of the new gage.

DISCHARGE MEASUREMENTS OF LITTLE TENNESSEE RIVER AT MCGHEE, TENN.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1905.						
Feb. 2	B. S. Drane	465	1,878	1.81	3.18	3,392
Feb. 16	do.	478	2,871	2.98	4.95	8,442
Apr. 13	O. P. Hall	470	2,747	2.94	5.02	8,063
June 17	do.	451	1,970	1.97	3.36	3,884
Oct. 9*	do.	348	587	2.92	2.25	1,715
Dec. 14*	M. R. Hall	452	1,364	3.95	3.95	5,383
1906.						
Feb. 14	O. P. Hall	464	1,330	....	3.84	4,910
Apr. 21	do.	477	1,730	....	4.62	7,230
June 14	do.	502	2,430	....	5.74	11,000
Nov. 1	do.	458	1,290	....	3.81	4,770
1907.						
Apr. 27	M. R. Hall	485	2,018	4.21	5.05	8,504
Aug. 15	F. A. Murray	462	1,200	3.05	3.29	3,663

\*Measurement made from new bridge.

DAILY GAGE HEIGHT, IN FEET, OF LITTLE TENNESSEE RIVER AT MCGHEE, TENN., FOR 1905  
AND 1906.

1905.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	2.10	3.10	4.60	3.80	5.20	3.90	4.30	3.00	3.00	2.30	2.30	2.20
2.....	2.00	3.10	4.40	3.70	4.60	3.70	3.80	2.90	3.60	2.30	2.20	2.70
3.....	2.40	2.80	4.30	3.70	4.20	3.50	3.50	2.90	3.40	2.30	2.20	7.80
4.....	2.60	3.10	4.20	3.70	4.20	3.50	3.30	2.90	3.10	2.80	2.20	7.00
5.....	2.10	3.10	4.10	3.80	4.10	3.40	3.20	2.90	3.00	2.90	2.20	4.80
6.....	2.10	4.60	4.10	4.30	4.60	3.40	3.40	2.90	2.90	2.50	2.30	3.90
7.....	2.80	4.40	4.00	4.40	4.70	3.30	3.80	2.90	2.80	2.40	2.40	3.60
8.....	2.70	4.50	4.00	4.10	4.80	3.20	3.40	3.20	2.80	2.30	2.40	3.60
9.....	2.60	14.00	4.40	4.40	5.00	3.10	3.20	3.80	2.70	2.20	2.40	6.40
10.....	2.80	8.80	7.40	4.60	4.40	3.10	3.30	3.70	2.70	2.30	2.30	7.50
11.....	3.50	6.30	6.60	4.20	4.00	3.00	3.40	5.00	2.70	3.20	2.30	6.00
12.....	4.90	4.30	5.40	4.80	4.00	3.10	6.30	5.60	2.70	4.70	2.30	4.60
13.....	13.00	6.00	5.00	5.20	3.80	3.30	8.70	4.90	3.00	3.10	2.30	4.20
14.....	7.00	5.50	4.70	4.60	3.70	3.20	5.80	4.40	2.80	2.70	2.30	3.90
15.....	5.50	5.60	4.50	4.20	3.60	3.00	5.20	5.10	2.60	2.60	2.20	4.00
16.....	4.60	4.70	4.30	4.10	5.60	3.50	4.70	4.60	2.50	2.50	2.20	4.30
17.....	4.00	4.90	4.10	4.00	6.40	3.40	4.30	4.30	2.50	2.50	2.20	4.10
18.....	3.80	4.60	4.00	3.80	5.10	3.30	4.00	4.10	2.50	2.50	2.20	3.90
19.....	3.80	4.20	4.00	3.70	4.60	3.30	3.90	4.10	2.50	2.40	2.20	3.70
20.....	3.70	5.20	4.00	3.60	4.40	3.60	4.10	3.80	2.50	2.50	2.40	3.60
21.....	3.60	13.70	4.60	3.60	4.10	3.60	3.80	3.60	2.50	2.70	2.80	4.90
22.....	3.50	9.10	5.30	3.70	4.30	3.90	3.80	3.40	2.50	2.50	2.60	5.10
23.....	3.50	7.60	4.50	3.60	4.60	4.30	4.10	3.40	2.50	2.40	2.40	6.00
24.....	3.30	6.90	4.30	3.50	5.60	3.90	3.70	6.10	2.40	2.30	2.30	6.40
25.....	3.20	5.80	4.30	3.40	5.00	3.50	3.50	4.90	2.30	2.30	2.30	5.50
26.....	2.40	5.50	4.20	3.50	4.50	3.30	3.40	4.00	2.30	2.50	2.30	4.80
27.....	2.30	5.10	4.10	4.30	4.30	4.20	3.30	3.70	2.30	3.10	2.30	4.40
28.....	2.30	4.80	4.00	4.20	4.20	5.00	3.20	3.40	2.30	2.80	2.30	4.20
29.....	3.00		3.90	4.30	4.10	3.80	3.50	3.20	2.30	2.60	2.30	4.30
30.....	3.10		3.90	6.50	4.00	3.50	3.30	3.10	2.30	2.40	2.20	4.20
31.....	3.10		4.00		4.20		3.10	3.00		2.40		4.00
1906.												
1.....	3.80	4.80	3.70	6.20	4.00	3.30	3.80	4.90	6.10	13.30	3.80	4.70
2.....	3.70	4.70	3.60	5.60	4.20	4.10	3.60	5.10	5.70	8.50	3.80	4.50
3.....	4.00	4.50	4.00	5.20	4.10	4.30	3.50	4.90	5.20	9.30	3.80	4.60
4.....	12.50	4.40	6.70	4.90	4.50	3.70	3.80	5.50	4.60	9.40	3.70	4.60
5.....	7.60	4.30	5.00	4.70	4.20	3.90	4.40	5.50	5.10	8.00	3.60	4.40
6.....	6.00	4.30	4.50	4.70	4.10	3.90	3.80	5.00	5.60	7.20	3.60	4.30
7.....	5.20	4.20	4.20	4.90	4.50	3.80	4.40	5.00	5.30	8.70	3.60	4.90
8.....	4.80	4.10	4.20	4.50	4.30	3.60	5.00	4.50	5.20	7.10	3.60	4.50
9.....	5.60	4.00	4.30	4.60	4.00	3.40	5.30	4.30	5.00	6.30	3.60	4.30
10.....	4.60	3.90	4.20	7.10	3.90	3.30	4.40	4.20	6.00	5.80	3.50	4.30
11.....	4.40	3.70	4.10	5.60	3.80	3.30	3.90	4.10	5.10	5.50	3.60	4.90
12.....	4.80	3.70	4.00	5.00	3.70	3.60	4.00	3.90	5.30	5.20	4.00	5.00
13.....	5.00	3.90	3.90	4.80	3.70	3.70	3.90	3.90	5.10	5.10	3.60	4.60
14.....	4.80	3.80	3.80	4.60	3.60	5.80	3.60	4.00	4.30	4.90	3.50	4.40
15.....	4.70	3.80	5.50	7.70	3.50	5.50	8.20	4.80	4.20	4.80	3.50	4.30
16.....	4.70	3.70	7.50	6.60	3.40	7.60	6.40	4.90	3.30	4.70	3.50	4.30
17.....	4.50	3.60	5.50	5.60	3.40	5.60	6.00	4.50	3.20	4.50	3.50	4.30
18.....	4.40	3.60	5.00	5.30	3.40	4.80	9.30	4.40	3.10	4.50	4.30	7.80
19.....	5.00	3.60	4.90	5.00	3.40	4.90	7.70	4.90	6.70	6.20	22.20	5.90
20.....	4.60	3.50	7.00	4.80	3.40	4.40	6.50	4.70	7.50	5.10	20.40	5.40
21.....	4.40	3.50	5.90	4.70	3.40	4.10	6.50	4.90	5.90	4.90	10.00	5.30
22.....	4.30	4.50	5.30	4.60	3.30	4.00	8.00	4.50	5.50	4.70	8.20	5.20
23.....	14.00	4.00	5.00	4.40	3.30	3.90	7.70	4.40	5.30	4.50	7.10	4.70
24.....	9.20	3.80	4.70	4.20	3.20	4.90	6.20	4.30	5.30	4.40	6.50	4.60
25.....	6.90	3.70	4.80	4.20	3.20	5.50	5.50	5.00	5.00	4.30	5.90	4.10
26.....	6.20	3.70	4.60	4.10	3.20	5.50	5.00	4.50	4.90	4.20	5.60	3.90
27.....	6.20	3.70	4.80	4.10	4.00	4.70	5.20	4.50	4.60	4.10	5.40	4.20
28.....	5.80	4.00	5.00	4.20	4.10	4.40	5.00	5.10	4.70	4.00	5.20	4.90
29.....	5.50		4.80	4.40	4.10	4.10	4.50	4.80	5.00	4.00	5.00	7.70
30.....	5.20		5.80	4.10	3.70	4.00	5.20	5.70	8.90	3.90	4.80	6.30
31.....	5.00		7.60		3.50		5.00	7.20		3.90		6.50

DAILY GAGE HEIGHT, IN FEET, OF LITTLE TENNESSEE RIVER AT MCGHEE, TENN., FOR 1907.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	7.50	4.40	4.60	4.60	4.30	4.80	4.40	3.00	2.60	3.80	2.60	3.70
2.....	6.30	9.10	5.50	4.20	4.20	5.60	4.10	3.10	2.60	3.50	2.70	3.60
3.....	5.70	6.20	6.90	3.90	4.10	4.70	3.40	3.00	2.60	3.30	4.40	3.50
4.....	5.50	5.30	5.60	3.80	5.10	4.60	4.10	2.90	2.80	3.20	3.50	3.50
5.....	5.30	6.00	5.00	3.70	5.00	4.40	3.90	2.90	2.80	3.50	3.10	3.40
6.....	5.00	6.20	4.80	3.90	4.50	4.20	3.70	3.30	2.80	3.90	3.00	3.20
7.....	4.80	5.50	4.50	4.20	5.80	4.00	3.60	3.30	2.60	3.40	3.00	3.30
8.....	4.70	5.10	5.40	4.30	6.10	4.00	3.50	3.00	2.70	3.30	2.90	3.30
9.....	4.60	4.90	5.30	4.20	5.60	6.10	3.40	3.00	3.40	3.40	2.80	3.20
10.....	4.60	4.60	5.20	4.20	5.10	5.30	3.30	2.90	3.00	3.20	3.90	3.70
11.....	4.50	4.50	6.60	4.00	5.10	4.80	3.40	2.90	3.00	3.10	5.00	5.40
12.....	4.40	4.40	5.50	3.90	5.90	4.50	3.40	2.90	3.50	3.00	4.00	4.20
13.....	4.30	4.30	4.40	3.90	5.20	4.20	5.50	3.20	2.90	2.90	3.60	4.00
14.....	4.30	4.20	4.70	3.80	4.90	4.50	4.50	3.00	2.70	2.90	3.40	4.30
15.....	4.10	4.10	5.60	3.70	4.70	4.50	4.00	3.10	2.60	2.80	3.30	5.80
16.....	4.10	4.00	5.40	3.90	4.90	4.00	3.70	3.30	2.50	2.80	3.20	4.90
17.....	4.10	4.00	4.90	4.30	4.50	3.60	3.60	3.50	2.50	2.80	3.10	4.50
18.....	4.30	3.90	4.70	4.10	4.30	3.60	3.50	3.30	2.60	2.80	3.20	4.20
19.....	4.10	3.90	4.50	5.10	4.20	3.60	3.50	3.30	2.60	2.70	3.90	4.10
20.....	4.10	3.90	4.40	5.70	4.10	3.90	3.60	3.20	2.50	2.70	3.70	4.00
21.....	4.70	3.80	4.30	4.70	4.00	3.90	3.50	3.00	2.40	2.70	3.50	3.90
22.....	4.20	3.80	4.20	4.40	3.90	3.70	3.30	3.20	3.00	2.70	4.80	3.80
23.....	4.10	3.80	4.10	5.20	3.80	3.90	3.20	3.20	6.30	2.70	4.90	4.00
24.....	4.00	3.70	4.00	6.00	3.80	4.30	3.20	3.20	6.60	2.70	9.80	6.50
25.....	4.00	4.40	4.00	5.20	3.80	5.30	3.10	3.10	4.20	2.70	6.70	5.20
26.....	4.00	4.10	3.90	4.80	4.00	4.50	3.30	3.00	3.50	2.60	5.30	4.60
27.....	4.00	5.00	4.10	5.20	4.50	4.40	3.30	2.90	3.20	2.70	4.70	4.50
28.....	3.90	4.80	3.90	5.00	4.10	4.00	3.10	2.80	3.20	3.20	4.30	4.30
29.....	3.80	-----	3.80	4.60	3.80	7.70	3.00	3.00	5.20	3.10	4.10	4.20
30.....	3.70	-----	3.70	4.40	3.70	5.00	3.70	2.80	4.50	2.80	3.90	5.30
31.....	3.80	-----	3.70	-----	3.80	-----	3.60	2.70	-----	2.70	-----	8.80

DAILY GAGE HEIGHT, IN FEET, OF LITTLE TENNESSEE RIVER AT MCGHEE, TENN., FOR 1908.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1.....	6.20	5.00	5.20	4.90	5.00	4.00	3.00	2.80	3.20	2.50
2.....	4.50	5.30	5.30	4.70	4.50	3.80	3.00	2.70	3.10	2.40
3.....	5.00	4.20	5.80	4.60	4.50	3.70	3.00	2.70	3.30	2.40
4.....	4.40	4.30	5.60	4.40	4.40	3.80	3.60	2.70	3.00	2.40
5.....	9.50	4.40	5.20	4.30	4.30	4.10	4.70	3.10	2.90	2.40
6.....	7.00	4.50	5.20	4.70	4.50	4.00	4.50	3.80	4.20	2.30
7.....	5.90	4.70	5.10	4.50	4.60	3.90	4.30	4.80	3.90	2.30
8.....	5.60	4.30	5.00	4.30	5.70	3.70	6.20	3.80	3.30	2.20
9.....	5.10	4.20	4.80	4.20	4.80	3.60	4.50	4.60	3.10	2.30
10.....	4.80	4.30	4.70	4.20	4.60	3.50	4.40	4.30	3.00	3.30
11.....	4.60	4.50	4.50	4.10	4.50	3.70	4.10	3.60	2.90	3.60
12.....	10.80	4.70	6.50	4.00	4.30	3.80	4.00	3.20	2.90	2.80
13.....	8.90	5.20	6.50	3.90	4.20	3.50	3.70	3.10	2.80	2.60
14.....	6.90	6.60	5.60	3.90	4.10	3.50	3.50	3.00	2.80	2.50
15.....	5.60	10.00	5.20	3.90	4.00	4.40	3.70	2.90	2.80	2.40
16.....	5.60	11.00	5.00	5.80	4.00	4.30	3.50	2.90	2.70	2.40
17.....	6.10	7.90	4.70	5.00	3.80	3.70	3.50	2.90	2.70	2.40
18.....	5.50	6.60	4.60	4.60	4.20	3.50	3.30	3.00	2.70	2.30
19.....	5.10	6.10	4.50	4.80	4.70	3.40	3.70	3.00	2.60	2.30
20.....	4.90	5.80	4.60	4.60	5.50	3.30	3.70	3.70	2.50	2.30
21.....	4.70	5.30	7.90	4.40	4.60	3.40	3.20	3.30	2.60	2.30
22.....	4.70	5.20	6.10	4.20	4.30	3.40	3.10	5.20	2.60	2.30
23.....	4.70	5.00	5.50	4.10	4.10	3.40	3.00	6.60	2.50	2.40
24.....	4.50	4.90	10.60	4.10	4.40	3.30	3.10	4.30	2.50	4.00
25.....	4.30	4.70	8.60	4.70	4.10	3.40	3.10	4.50	2.50	3.50
26.....	4.20	4.90	6.90	8.30	4.30	3.70	3.00	5.10	2.50	3.00
27.....	4.40	4.50	6.10	6.10	4.20	3.20	3.00	4.30	2.40	2.70
28.....	4.40	4.70	5.70	5.50	4.20	3.10	3.00	3.80	2.40	2.60
29.....	4.20	4.30	5.40	5.00	4.10	3.10	2.90	3.60	2.60	3.20
30.....	4.10	-----	5.20	4.80	4.50	3.00	3.20	3.40	2.70	4.00
31.....	4.00	-----	5.00	-----	4.10	-----	3.00	3.30	-----	3.50

RATING TABLE FOR LITTLE TENNESSEE RIVER AT MCGHEE, TENN., FOR 1905.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
2.00	1,390	3.60	4,470	5.20	8,850	7.60	16,240
2.10	1,520	3.70	4,720	5.30	9,140	7.80	16,880
2.20	1,650	3.80	4,970	5.40	9,430	8.00	17,520
2.30	1,790	3.90	5,230	5.50	9,720	8.20	18,180
2.40	1,940	4.00	5,490	5.60	10,020	8.40	18,840
2.50	2,090	4.10	5,760	5.70	10,320	8.60	19,500
2.60	2,250	4.20	6,030	5.80	10,620	8.80	20,160
2.70	2,420	4.30	6,300	5.90	10,920	9.00	20,820
2.80	2,600	4.40	6,580	6.00	11,220	10.00	24,220
2.90	2,800	4.50	6,860	6.20	11,840	11.00	27,720
3.00	3,020	4.60	7,140	6.40	12,460	12.00	31,320
3.10	3,250	4.70	7,420	6.60	13,080	13.00	35,020
3.20	3,490	4.80	7,700	6.80	13,700	14.00	38,820
3.30	3,730	4.90	7,980	7.00	14,320		
3.40	3,970	5.00	8,270	7.20	14,960		
3.50	4,220	5.10	8,560	7.40	15,600		

NOTE.—The above table is based on six discharge measurements made during 1905. It is well defined between gage heights 2.2 feet and 5 feet. The table has been extended beyond these limits.

RATING TABLE FOR LITTLE TENNESSEE RIVER AT MCGHEE, TENN., FOR 1906 AND 1907.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
2.40	1,940	3.90	5,150	5.40	9,420	7.80	16,880
2.50	2,090	4.00	5,410	5.50	9,720	8.00	17,520
2.60	2,250	4.10	5,680	5.60	10,020	8.20	18,180
2.70	2,420	4.20	5,950	5.70	10,320	8.40	18,840
2.80	2,600	4.30	6,220	5.80	10,620	8.60	19,500
2.90	2,790	4.40	6,500	5.90	10,920	8.80	20,160
3.00	2,990	4.50	6,780	6.00	11,220	9.00	20,820
3.10	3,200	4.60	7,060	6.20	11,840	10.00	24,220
3.20	3,420	4.70	7,350	6.40	12,460	11.00	27,720
3.30	3,650	4.80	7,640	6.60	13,080	12.00	31,320
3.40	3,890	4.90	7,930	6.80	13,700	13.00	35,020
3.50	4,130	5.00	8,220	7.00	14,320	14.00	38,820
3.60	4,390	5.10	8,520	7.20	14,960	15.00	42,620
3.70	4,630	5.20	8,820	7.40	15,600		
3.80	4,890	5.30	9,120	7.60	16,240		

NOTE.—The above table is applicable only for open-channel conditions. It is based on eleven discharge measurements made during 1903 to 1906, and one made in 1901. It is well defined between gage heights 2.2 feet and 5.0 feet. Above gage height 13.0 feet the rating curve is a tangent, the difference being 380 per tenth.

## ESTIMATED MONTHLY DISCHARGE OF LITTLE TENNESSEE RIVER AT MCGHEE, TENN.

[Drainage area, 2,470 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maxi-mum.	Mini-mum.	Mean.	Second-feet per Square Mile.	Depth in Inches.
1905.					
January.....	35,020	1,390	4,959	2.01	2.32
February.....	38,820	2,600	10,990	4.45	4.63
March.....	15,600	5,230	6,880	2.79	3.22
April.....	12,770	3,970	5,836	2.36	2.63
May.....	12,460	4,470	6,928	2.80	3.23
June.....	8,270	3,020	4,312	1.75	1.95
July.....	19,830	3,250	5,661	2.29	2.64
August.....	11,530	2,800	5,168	2.09	2.41
September.....	4,470	1,790	2,423	.981	1.09
October.....	7,420	1,650	2,363	.957	1.10
November.....	2,600	1,650	1,811	.733	.818
December.....	16,880	1,650	7,586	3.07	3.54
The year.....	38,820	1,390	5,410	2.19	29.58
1906.					
January.....	38,800	4,630	10,600	4.29	4.95
February.....	7,640	4,130	5,340	2.16	2.25
March.....	16,200	4,380	8,200	3.32	3.83
April.....	16,600	5,680	8,320	3.37	3.76
May.....	6,780	3,420	4,780	1.94	2.24
June.....	16,200	3,650	6,570	2.66	2.97
July.....	21,800	4,130	9,380	3.80	4.38
August.....	15,000	5,150	7,590	3.07	3.54
September.....	20,500	3,200	9,010	3.65	4.07
October.....	36,200	5,150	11,000	4.45	5.13
November.....	70,000	4,130	11,300	4.57	5.10
December.....	16,900	5,150	8,140	3.30	3.80
The year.....	70,000	3,200	8,350	3.38	46.02

NOTE.—Values for 1906 are excellent.

ESTIMATED MONTHLY DISCHARGE OF LITTLE TENNESSEE RIVER AT MCGHEE, TENN.  
[Drainage area, 2,470 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maxi- mum.	Mini- mum.	Mean.	Second- feet per Square Mile.	Depth in Inches.
1907.					
January.....	15,900	4,630	6,940	2.81	3.24
February.....	21,200	4,630	7,490	3.03	3.16
March.....	14,000	4,630	7,560	3.06	3.53
April.....	11,200	4,630	6,630	2.69	3.00
May.....	11,500	4,630	6,950	2.81	3.24
June.....	16,600	4,380	6,910	2.80	3.12
July.....	9,720	2,990	4,490	1.82	2.10
August.....	4,130	2,420	3,140	1.27	1.46
September.....	13,100	1,940	3,820	1.55	1.73
October.....	5,150	2,250	3,090	1.25	1.44
November.....	23,500	2,250	5,680	2.30	2.57
December.....	20,200	3,420	6,500	2.63	3.03
The year.....	23,500	1,940	5,770	2.34	31.62

## LITTLE TENNESSEE RIVER AT JUDSON, N. C.

This station was established in June, 1896. It is located on the Southern Railway bridge, about one-fourth mile from Judson, N. C.

The channel is straight for several hundred yards above and below the station; the bottom rocky and very rough on the west side and sandy on the east side. The current is swift and considerably obstructed by two wide timber piers. The section is constant, but not a good one for measurements.

The original gage was a standard chain gage located on the downstream side of the first span from the left end of the bridge; length of chain, 26.29 feet. In 1905 a vertical gage was installed. The vertical gage is in two sections; the first, reading from 1.5 feet to 6 feet, is bolted to a solid rock on the right bank, about 100 feet above the bridge. The second section, reading from 6 to 11 feet, is fastened to a maple tree about 30 feet downstream from the first section. This gage was set to read with the chain gage at a gage height of 3 feet, but owing to the large amount of slope in the river, the actual elevation of its zero is 0.50 foot above the datum of the chain gage. The gage is read once each day by J. L. Enloe. Bench marks were established as follows: (1) The top of the angle block on the lower chord at the middle of the first span from the left end of the bridge, on the downstream side; elevation, 22.86 feet. (2) A standard copper bolt set in the rock near the end of the tunnel on the right bank, 130 feet from the end of the bridge and 8 feet from the center of the track; elevation 27.64 feet. Elevations refer to the datum of the vertical gage.

## DISCHARGE MEASUREMENTS OF LITTLE TENNESSEE RIVER AT JUDSON, N. C.

Date.	Hydrographer.	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1896.					
June 25	E. W. Myers.....	345	2.60	2.76	929
Sept. 23	do.....	286	2.71	3.00	775
1897.					
Aug. 21	E. W. Myers.....	278	2.78	3.21	771
Oct. 13	do.....	247	2.83	2.75	701
Oct. 28	A. P. Davis.....	207	2.77	2.44	448
1898.					
Sept. 6	E. W. Myers.....	920	10.67	7.30	9,821
1899.					
Feb. 27	.....	...	...	10.25	21,880
June 20	.....	...	...	3.30	1,491
Sept. 21	.....	...	...	2.23	339
Sept. 27	.....	...	...	2.65	721
Oct. 29	.....	...	...	2.84	806
Dec. 6	.....	...	...	2.75	758
1900.					
Feb. 10	.....	...	...	4.55	3,726
Mar. 30	.....	...	...	4.40	3,179
Apr. 28	.....	...	...	4.55	3,785
May 25	.....	...	...	3.50	1,744
June 28	.....	...	...	5.00	4,644
Aug. 4	.....	...	...	3.45	1,668
Nov. 17	.....	...	...	2.88	1,008
Dec. 27	.....	...	...	3.40	1,414
1901.					
Feb. 22	.....	...	...	3.45	1,444
Apr. 18	.....	...	...	4.28	2,319
Sept. 19	.....	...	...	5.00	4,200
Dec. 12	.....	...	...	2.95	1,062
1902.					
Aug. 11	B. S. Drane.....	277	2.50	2.50	686
Aug. 22	do.....	267	1.76	2.50	471
Oct. 25	do.....	308	2.39	2.62	736

## DISCHARGE MEASUREMENTS OF LITTLE TENNESSEE RIVER AT JUDSON, N. C.—Continued.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1903.						
Mar. 30	B. S. Drane.....	---	1,037	---	6.91	10,494
Apr. 26	E. W. Myers.....	---	543	---	4.35	3,033
June 28	do.....	---	395	---	3.56	1,796
Aug. 20	B. S. Drane.....	---	285	---	2.86	1,097
Oct. 10	do.....	---	277	---	2.48	565
Oct. 10	do.....	---	271	---	2.46	559
1904.						
Mar. 21	B. S. Drane.....	---	424	3.58	3.49	1,554
May 25	do.....	---	303	3.27	2.95	993
Aug. 15	do.....	---	311	3.07	2.98	955
Sept. 30	do.....	---	216	2.02	2.32	436
Dec. 13	do.....	---	249	2.33	2.53	580
1905.						
Apr. 14	B. S. Drane.....	150	416	4.12	3.60	1,714
June 14	O. P. Hall.....	139	305	3.10	3.02	944
Oct. 14	do.....	139	298	2.85	2.79	851
1906.						
Feb. 10	O. P. Hall.....	147	445	---	3.82	1,860
Apr. 13	do.....	155	508	---	4.18	2,630
June 9	do.....	144	378	---	3.30	1,480
Nov. 5	do.....	152	433	---	3.72	1,820
Nov. 6	do.....	152	424	---	3.70	1,810
1907.						
May 22	F. A. Murray.....	150	356	4.25	3.48	1,513
Oct. 18	Olin P. Hall.....	139	297	2.75	2.64	818

## DAILY GAGE HEIGHT, IN FEET, OF LITTLE TENNESSEE RIVER AT JUDSON, N. C., FOR 1896.

Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	2.70	3.35	2.60	2.90	3.10	7.70	17.....	4.00	3.60	2.70	---	3.70	4.53
2.....	2.80	3.30	2.60	2.80	2.90	6.30	18.....	3.65	3.10	2.70	---	3.68	3.83
3.....	2.77	3.30	2.70	2.78	2.80	5.30	19.....	3.64	3.00	2.60	---	3.60	3.88
4.....	2.95	3.30	2.80	2.68	2.99	4.30	20.....	3.70	3.00	2.70	---	3.50	3.80
5.....	2.85	3.21	2.90	2.60	5.70	4.40	21.....	3.70	3.20	2.70	---	3.50	3.80
6.....	3.82	3.19	2.90	2.53	4.55	4.30	22.....	4.10	3.85	2.67	---	3.50	3.79
7.....	4.22	3.15	2.80	2.55	3.30	4.20	23.....	5.11	2.83	2.18	---	3.50	3.78
8.....	6.70	3.13	2.60	2.54	3.30	4.10	24.....	4.28	2.92	2.68	---	3.50	3.78
9.....	8.80	3.19	2.55	2.53	3.51	4.10	25.....	4.20	3.00	2.60	3.10	3.40	3.75
10.....	5.70	3.21	2.53	2.53	3.50	4.90	26.....	4.10	3.00	2.54	2.90	3.50	3.45
11.....	8.95	3.12	2.50	---	3.40	4.80	27.....	3.85	2.80	2.60	2.90	3.60	3.46
12.....	4.65	3.10	2.64	---	4.30	3.88	28.....	3.92	2.80	2.60	2.80	3.70	3.54
13.....	4.50	3.20	2.63	---	5.70	3.89	29.....	3.80	2.90	2.60	2.90	6.10	3.46
14.....	4.20	3.10	2.53	---	4.30	3.89	30.....	3.56	2.80	3.30	3.10	7.70	3.61
15.....	3.95	3.90	2.84	---	4.20	4.30	31.....	3.45	---	---	3.00	---	3.60
16.....	4.00	3.70	2.75	---	3.30	4.60							



DAILY GAGE HEIGHT, IN FEET, OF LITTLE TENNESSEE RIVER AT JUDSON, N. C., FOR  
1897 AND 1898.

1897.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	3.40	5.50	4.20	6.23	4.20	3.82	3.30	3.48	2.83	2.52	2.38	2.58
2.....	3.56	6.40	3.56	7.50	3.56	3.78	3.50	3.46	2.85	2.53	3.30	2.56
3.....	3.53	5.54	3.56	7.91	3.54	2.91	3.42	3.39	2.89	2.60	2.86	2.55
4.....	3.54	4.80	3.53	7.90	3.52	4.20	3.50	3.43	2.86	2.54	2.70	3.00
5.....	3.51	4.59	3.56	6.55	3.53	4.80	3.60	3.45	2.84	2.55	2.58	4.58
6.....	3.52	5.30	4.50	6.53	3.58	3.90	3.70	3.40	2.84	2.57	2.79	4.39
7.....	3.65	4.56	4.35	5.80	3.57	3.59	3.63	3.46	2.85	2.50	2.80	4.00
8.....	3.65	4.59	4.59	5.70	3.57	3.58	3.67	3.48	2.73	2.56	2.72	3.80
9.....	3.64	4.50	6.40	5.30	3.22	3.55	3.75	3.47	2.71	2.53	2.73	3.00
10.....	3.63	4.47	7.29	4.23	3.23	3.56	3.72	3.44	2.73	4.54	2.78	2.90
11.....	3.69	5.20	7.38	4.50	3.27	3.59	3.70	3.38	2.77	4.58	2.70	2.89
12.....	3.65	5.28	9.20	4.60	3.27	3.57	3.48	3.35	2.89	2.56	2.76	2.86
13.....	3.66	5.26	7.32	5.70	4.76	3.58	3.49	3.36	2.89	2.49	2.79	2.80
14.....	3.65	5.30	7.23	5.23	5.21	3.53	3.42	3.32	2.83	2.50	2.61	3.51
15.....	3.64	4.59	7.15	4.59	5.13	3.59	3.45	3.35	2.88	2.53	2.63	3.00
16.....	3.62	4.56	6.35	5.40	4.12	3.61	3.51	4.00	2.86	2.53	2.68	3.00
17.....	3.65	3.70	5.53	4.54	4.90	3.62	4.33	3.86	2.90	2.54	2.73	2.89
18.....	3.64	3.80	6.95	3.53	4.70	3.60	4.56	3.86	2.90	2.60	2.70	2.90
19.....	3.69	3.53	7.65	3.52	4.30	3.60	4.91	3.78	2.80	2.22	2.69	2.96
20.....	4.80	3.52	8.90	3.15	3.57	3.48	5.20	3.52	2.38	3.48	2.67	3.40
21.....	4.80	4.30	8.00	3.22	3.56	3.50	4.36	3.32	2.40	3.37	2.68	3.58
22.....	4.82	5.60	8.50	3.21	3.56	3.42	4.20	3.22	2.37	2.86	2.60	4.56
23.....	4.62	8.60	7.53	3.18	3.41	3.44	4.21	3.23	2.33	2.70	2.65	4.59
24.....	4.60	6.75	7.85	3.18	3.90	3.47	3.78	3.35	2.39	2.72	2.67	3.48
25.....	3.90	4.75	6.25	3.32	3.70	3.41	3.72	3.29	2.50	2.60	2.70	3.36
26.....	3.84	4.63	5.55	3.39	3.90	3.48	3.70	3.90	2.60	2.63	2.82	3.38
27.....	3.84	4.53	5.53	3.30	3.80	3.46	3.73	3.00	2.52	2.35	3.10	3.30
28.....	3.83	4.29	5.60	3.41	3.51	3.45	3.71	3.33	2.50	2.39	2.89	3.00
29.....	3.68	-----	5.56	3.90	3.60	3.43	3.75	2.78	2.53	2.39	2.80	2.97
30.....	3.69	-----	5.70	3.99	3.90	3.40	3.71	2.79	2.57	2.33	2.86	2.78
31.....	3.65	-----	6.21	-----	3.80	-----	3.69	2.77	-----	2.34	-----	2.90
1898.												
1.....	2.83	2.57	2.92	5.78	3.42	2.41	2.71	3.35	5.28	3.53	4.58	3.89
2.....	2.90	2.90	2.80	5.60	3.63	2.42	2.18	3.42	7.22	3.56	4.52	3.89
3.....	2.73	2.84	2.90	4.32	3.62	2.42	2.19	4.21	11.93	3.82	4.53	3.88
4.....	2.75	2.93	2.73	3.38	3.60	2.38	2.17	10.38	9.52	8.71	4.53	3.88
5.....	2.76	2.56	3.00	5.50	3.68	2.39	2.16	5.72	7.21	13.50	4.59	3.81
6.....	2.70	2.80	2.98	4.58	3.61	2.30	2.13	4.98	6.82	10.22	4.57	3.80
7.....	2.80	2.59	2.74	3.96	4.23	2.37	2.20	4.52	5.91	8.28	4.58	3.74
8.....	2.73	2.56	2.78	3.85	3.56	2.36	2.21	4.31	4.51	6.71	4.51	3.74
9.....	2.71	2.58	2.37	3.38	3.58	2.36	2.20	4.28	4.28	5.99	4.52	3.71
10.....	2.70	2.38	2.30	3.40	3.53	2.38	2.15	5.78	3.91	5.82	3.98	3.72
11.....	2.68	2.30	2.34	3.00	3.98	2.37	2.16	7.91	3.92	4.20	3.98	3.70
12.....	2.89	2.36	2.36	3.56	3.98	2.39	2.78	8.53	3.81	4.00	3.97	3.69
13.....	2.73	2.60	2.39	3.58	3.70	2.20	3.00	9.02	3.59	3.52	3.98	3.68
14.....	2.78	2.74	2.40	3.59	3.69	2.33	3.98	8.93	3.58	3.58	3.91	3.68
15.....	2.76	2.73	2.98	3.52	3.68	2.30	6.81	5.58	3.58	3.54	3.92	3.67
16.....	2.79	2.76	2.96	3.90	3.62	2.72	4.20	4.93	3.52	3.48	3.92	3.64
17.....	2.78	2.80	2.96	3.46	3.67	2.71	3.28	4.92	3.49	3.44	3.90	3.63
18.....	3.00	3.00	3.48	3.40	3.49	2.78	3.00	4.71	3.44	6.95	3.88	3.60
19.....	3.56	3.11	3.00	3.49	3.51	2.70	2.78	4.83	3.43	4.53	3.87	3.58
20.....	3.58	3.23	2.98	3.92	3.56	2.62	2.71	4.38	3.48	4.52	3.89	3.59
21.....	3.59	3.28	2.90	3.90	3.00	2.63	2.68	4.78	3.49	3.98	3.89	3.59
22.....	4.42	3.00	2.92	3.58	3.90	2.60	2.41	4.91	3.47	3.91	3.88	3.57
23.....	4.40	3.00	2.93	3.98	3.72	2.70	3.52	4.58	3.42	3.91	3.86	3.57
24.....	3.58	2.90	2.90	3.52	3.45	2.71	3.21	4.53	3.48	3.84	3.86	4.98
25.....	3.50	2.29	2.97	3.54	3.42	2.74	3.00	4.51	3.47	3.98	3.84	3.59
26.....	3.48	2.70	2.97	3.50	3.44	2.70	3.21	4.51	3.46	4.41	3.83	3.57
27.....	5.58	2.78	2.56	3.28	3.37	2.73	3.58	4.52	3.44	4.52	3.85	3.58
28.....	5.20	2.78	3.04	3.29	3.33	2.70	3.28	4.53	3.45	4.57	3.88	3.56
29.....	3.39	-----	8.30	3.24	3.30	2.78	3.29	4.38	3.48	4.61	3.89	3.52
30.....	3.86	-----	7.79	3.40	2.27	2.79	3.22	4.38	3.52	4.52	3.88	3.53
31.....	2.94	-----	6.39	-----	2.30	-----	3.30	4.50	-----	4.58	-----	3.50

DAILY GAGE HEIGHT, IN FEET, OF LITTLE TENNESSEE RIVER AT JUDSON, N. C., FOR  
1899 AND 1900.

1899.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	3.52	3.56	4.82	4.78	3.78	2.38	3.14	3.70	4.32	2.48	2.48	2.72
2.....	3.59	3.59	4.39	4.50	3.76	2.47	3.40	3.68	4.21	2.46	2.49	2.72
3.....	3.59	4.98	3.98	3.99	3.80	2.40	3.33	3.68	3.17	2.46	2.40	2.70
4.....	3.57	11.38	3.74	3.82	3.92	2.37	3.30	3.64	3.80	2.45	2.41	2.70
5.....	3.56	10.58	3.72	3.81	5.68	2.38	3.27	3.62	3.81	2.42	2.72	2.70
6.....	3.52	9.72	3.64	3.80	4.93	2.34	3.28	3.58	3.70	2.39	2.74	2.58
7.....	4.23	11.40	3.64	3.78	4.80	2.31	4.42	3.47	2.91	2.39	2.69	2.59
8.....	4.23	9.58	3.68	3.72	3.91	2.30	3.90	3.28	2.46	3.71	2.68	2.52
9.....	3.98	8.56	3.67	3.72	3.90	2.29	3.18	2.71	2.33	5.58	2.64	2.50
10.....	3.92	7.51	3.61	3.70	3.82	2.29	3.10	2.70	2.32	4.31	2.64	2.62
11.....	3.84	5.32	3.61	3.68	3.71	2.27	2.90	4.98	2.32	3.72	2.63	2.62
12.....	3.84	5.32	3.62	3.69	3.70	2.91	2.71	4.57	2.28	3.90	2.62	2.60
13.....	3.80	4.58	3.64	3.49	3.68	6.71	2.71	3.38	2.27	2.58	2.62	2.70
14.....	3.71	3.72	9.55	3.48	3.60	6.70	2.70	2.92	2.25	2.51	2.62	8.40
15.....	3.70	3.71	7.42	3.46	3.62	5.82	2.68	2.88	2.25	2.50	2.64	6.50
16.....	3.69	3.70	8.93	3.48	3.80	5.40	2.69	2.88	2.24	2.50	2.63	4.51
17.....	3.68	3.68	6.81	3.52	3.82	3.58	3.48	2.64	2.22	2.43	2.58	3.92
18.....	3.69	3.68	4.58	3.52	3.71	3.41	3.30	2.63	2.25	2.49	2.59	2.94
19.....	3.69	3.72	13.00	3.51	3.74	3.40	3.10	2.60	2.28	2.52	2.57	2.94
20.....	3.69	3.74	12.00	3.48	3.78	2.56	2.93	2.60	2.28	2.52	2.57	2.90
21.....	3.66	3.74	8.55	3.49	3.52	2.58	2.84	2.48	2.23	2.57	2.49	2.53
22.....	3.68	3.70	6.54	3.61	2.90	2.47	3.91	2.42	2.20	2.60	2.54	2.52
23.....	3.67	3.69	4.88	3.60	2.80	2.75	4.28	2.41	2.21	2.60	2.70	2.41
24.....	3.67	3.68	4.32	3.72	2.50	2.70	4.20	2.41	2.21	2.50	2.71	2.40
25.....	3.69	3.60	4.28	3.72	2.47	3.15	3.90	2.40	2.26	2.50	2.77	2.42
26.....	3.58	3.65	3.92	3.70	2.46	3.10	3.90	2.39	2.65	2.50	2.89	2.42
27.....	3.52	10.25	4.78	3.78	2.30	3.00	3.91	2.38	2.50	2.50	3.42	2.43
28.....	3.59	6.72	4.74	3.74	2.31	3.31	3.88	2.37	2.41	2.60	3.50	2.41
29.....	3.58		5.70	3.79	2.36	3.30	3.86	2.37	2.41	2.58	2.93	2.42
30.....	3.59		5.90	3.70	3.36	3.00	3.86	2.24	2.40	2.57	2.90	2.42
31.....	3.57		5.60		2.34		3.71	2.26		2.57		2.39
1900.												
1.....	2.36	2.65	6.33	3.68	2.93	3.40	5.68	3.71	3.19	3.21	3.00	3.31
2.....	2.36	2.70	4.42	3.67	2.93	4.00	5.69	3.61	3.18	3.22	3.00	3.29
3.....	2.38	2.68	3.78	3.67	2.84	3.52	5.69	3.51	3.10	3.22	3.50	3.28
4.....	2.32	2.67	3.70	3.41	2.71	3.76	5.66	3.41	3.10	3.22	3.41	6.07
5.....	2.32	2.67	3.70	3.33	2.70	3.52	4.38	3.41	3.11	3.21	3.10	5.63
6.....	2.30	2.69	3.84	3.30	2.70	3.62	4.32	3.41	3.13	3.20	3.00	4.28
7.....	2.31	3.72	3.84	2.91	2.68	3.72	4.32	3.31	3.12	3.21	3.00	4.22
8.....	2.31	3.40	3.93	2.88	2.69	4.00	4.61	3.31	3.13	3.22	2.91	3.10
9.....	2.33	3.78	6.40	2.80	2.68	3.82	4.60	3.21	3.11	3.22	2.91	3.14
10.....	2.34	4.37	4.30	2.74	2.68	3.62	4.74	3.21	3.11	3.23	2.91	3.14
11.....	2.34	3.39	4.40	2.79	2.67	3.52	3.61	3.21	3.14	2.51	2.91	3.14
12.....	2.42	3.33	4.58	5.45	2.53	3.62	3.71	3.21	3.13	2.61	2.91	3.15
13.....	4.38	11.35	4.58	5.92	2.58	4.62	3.71	3.21	3.14	2.81	2.81	3.25
14.....	3.72	5.68	3.98	4.39	2.59	4.00	3.91	3.11	3.15	2.71	2.81	3.25
15.....	2.91	4.58	3.93	3.58	2.71	3.82	4.38	3.21	3.16	2.61	2.81	3.19
16.....	2.90	3.33	4.38	3.92	2.70	3.92	4.32	3.11	3.16	2.61	2.81	3.23
17.....	2.90	3.41	4.40	3.00	2.68	3.88	3.81	3.11	3.19	2.61	2.81	3.24
18.....	2.83	3.48	3.99	3.54	2.67	3.89	3.71	3.21	3.20	2.61	2.81	3.21
19.....	2.82	3.48	3.98	3.50	2.64	3.84	3.51	3.22	3.20	2.51	2.81	3.21
20.....	2.81	3.52	3.98	4.38	2.81	4.48	3.51	3.28	3.21	2.51	2.81	3.92
21.....	2.82	3.58	3.90	3.49	2.90	4.67	3.41	3.28	3.22	2.59	3.00	5.68
22.....	2.85	3.58	3.90	3.48	2.90	4.93	3.51	3.29	3.21	2.61	3.00	4.91
23.....	2.87	3.62	3.94	3.48	3.35	5.41	3.71	3.28	3.20	3.61	2.81	3.72
24.....	2.72	3.69	3.93	3.40	4.50	5.40	3.71	3.27	3.22	6.71	2.81	3.69
25.....	2.75	3.63	3.90	3.40	4.48	5.40	3.41	3.27	3.22	5.21	3.61	3.68
26.....	2.78	3.60	3.90	3.32	4.47	5.91	3.71	3.22	3.21	3.71	4.81	3.65
27.....	2.78	3.90	3.82	3.33	4.43	5.90	3.61	3.20	3.23	3.51	4.00	3.65
28.....	2.73	3.80	3.80	3.29	3.30	5.88	4.31	3.21	3.20	2.51	3.01	3.65
29.....	2.72		3.84	3.28	3.40	5.83	4.00	3.21	3.21	3.31	3.51	3.92
30.....	2.69		3.84	3.28	3.40	5.71	3.91	3.23	3.22	3.30	3.51	3.48
31.....	2.69		3.71		3.40		3.71	3.23		3.30		3.43

DAILY GAGE HEIGHT, IN FEET, OF LITTLE TENNESSEE RIVER AT JUDSON, N. C., FOR 1901  
AND 1902.

1901.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	3.43	3.59	3.22	4.22	3.48	4.61	3.35	3.50	4.20	3.21	3.10	2.78
2.....	3.57	3.59	3.21	8.40	3.46	3.92	3.28	3.40	4.26	3.19	3.11	2.79
3.....	3.59	3.62	3.18	6.33	3.46	3.80	3.30	3.50	3.72	3.19	2.98	2.79
4.....	3.63	4.32	3.19	5.44	3.39	3.78	4.61	3.11	3.72	3.16	2.99	2.78
5.....	3.68	4.23	3.19	4.62	3.38	3.78	4.28	3.10	3.61	3.13	2.98	2.76
6.....	3.69	3.84	3.17	4.28	3.36	3.64	3.96	4.63	3.60	3.15	2.98	2.76
7.....	3.60	3.61	3.18	4.26	3.36	3.62	3.82	7.32	3.58	3.14	2.94	2.75
8.....	3.60	3.57	3.18	4.25	3.34	3.60	4.36	6.28	3.49	3.14	2.94	2.74
9.....	3.58	3.58	3.45	4.90	3.35	3.54	3.91	4.23	3.47	3.80	2.94	2.75
10.....	5.62	3.56	5.39	3.84	3.29	3.53	3.79	3.71	3.42	3.70	2.96	3.49
11.....	8.40	3.56	5.80	3.63	3.29	3.53	3.76	3.96	3.42	3.40	2.94	5.92
12.....	5.30	3.42	4.39	3.81	3.26	3.51	3.54	3.94	3.40	4.51	2.93	3.51
13.....	4.31	3.42	4.20	4.53	3.25	3.49	3.42	6.40	3.31	3.64	2.93	3.48
14.....	4.31	3.40	3.61	4.28	3.25	4.72	3.39	7.15	3.30	3.34	2.90	4.64
15.....	3.42	3.32	3.42	4.22	3.26	6.41	3.38	7.28	3.28	3.31	2.90	13.59
16.....	3.41	3.23	3.40	3.96	3.23	5.33	3.38	6.39	3.28	3.28	2.89	8.42
17.....	3.38	3.38	3.39	3.64	2.23	5.31	3.36	9.54	3.24	3.23	2.87	6.38
18.....	3.21	3.37	3.39	3.82	3.19	4.96	3.33	6.42	3.25	3.22	2.87	4.22
19.....	3.22	3.37	3.37	5.00	4.28	4.92	3.29	5.38	3.23	3.21	2.84	4.22
20.....	3.20	3.38	3.33	8.46	12.32	4.83	3.22	4.93	3.21	3.19	2.83	4.21
21.....	3.18	3.38	4.53	6.38	8.46	4.61	3.21	4.84	3.21	3.19	2.85	4.19
22.....	3.18	3.38	4.39	5.46	5.39	4.34	3.21	4.83	3.23	3.18	2.84	3.91
23.....	3.18	3.27	3.78	4.93	4.93	4.28	3.20	10.32	3.25	3.14	2.96	3.92
24.....	3.21	3.22	3.46	4.61	4.68	4.21	3.18	6.40	3.25	3.13	2.88	3.96
25.....	3.19	3.21	3.41	4.45	4.23	3.94	3.14	5.32	3.24	3.13	2.86	3.93
26.....	3.18	3.21	10.54	3.93	4.19	3.65	3.11	5.28	3.22	3.13	2.86	3.90
27.....	3.92	3.23	8.40	3.82	4.19	3.62	3.11	4.73	3.22	3.14	2.85	3.81
28.....	3.98	3.22	5.33	3.61	4.13	3.48	3.90	7.39	3.23	3.13	2.86	5.31
29.....	3.69		4.09	3.60	4.12	3.34	3.90	7.42	3.22	3.12	2.84	13.92
30.....	3.69		4.15	3.54	4.12	3.34	3.60	6.51	3.22	3.11	2.81	12.28
31.....	3.67		4.20		5.08		3.50	5.41		3.11		10.92
1902.												
1.....	8.41	6.72	7.29	4.92	3.24	3.20	2.91	2.71	2.51	8.00	2.61	3.35
2.....	6.51	5.38	5.22	4.84	4.61	3.41	2.91	2.71	2.41	2.91	2.71	3.32
3.....	6.34	4.92	4.96	4.34	3.22	3.31	3.00	2.71	2.41	2.81	2.61	4.90
4.....	5.28	4.92	4.94	4.31	3.18	3.10	2.81	2.61	2.91	2.71	2.51	3.15
5.....	4.49	4.91	4.81	4.23	3.10	3.08	2.81	2.61	2.71	2.91	2.61	3.10
6.....	4.48	4.86	4.81	4.21	4.26	3.05	2.81	2.51	2.51	2.91	4.71	3.74
7.....	4.48	4.42	4.78	4.19	3.92	3.10	2.81	2.61	2.51	2.81	3.41	3.45
8.....	4.46	4.50	5.21	4.19	3.17	3.31	2.81	2.51	2.51	2.71	3.00	3.41
9.....	4.52	4.60	4.19	4.12	2.94	3.10	3.00	2.51	2.81	2.71	2.91	3.35
10.....	4.51	4.50	4.12	4.90	2.91	3.05	3.00	2.61	2.51	2.61	2.81	3.26
11.....	4.43	4.20	4.13	4.90	2.93	3.04	3.10	2.51	2.71	2.71	2.81	3.20
12.....	4.42	4.20	4.13	4.60	2.91	3.03	3.51	2.51	2.61	3.41	2.81	3.35
13.....	4.39	4.10	4.10	4.80	3.61	3.00	3.31	2.41	2.61	3.00	2.81	3.30
14.....	4.32	3.98	4.10	4.70	3.71	3.20	2.91	2.51	3.10	3.10	2.71	3.25
15.....	4.28	3.96	4.12	4.60	3.61	3.20	3.91	2.51	2.71	2.91	2.71	3.15
16.....	4.24	4.21	5.39	4.30	3.51	3.20	2.81	2.71	2.61	2.81	2.70	3.25
17.....	4.22	4.28	4.72	4.28	3.51	3.10	2.71	2.71	2.51	2.81	2.76	4.60
18.....	3.91	4.27	4.68	4.92	3.51	2.91	2.71	2.51	2.51	2.71	2.70	4.00
19.....	3.92	4.22	4.22	4.61	3.41	3.00	2.81	2.51	2.91	2.71	2.70	3.85
20.....	3.96	3.93	4.15	5.20	3.41	3.01	3.10	2.41	3.31	2.71	2.80	3.71
21.....	4.51	3.93	3.96	4.42	3.41	3.31	2.91	2.41	3.00	2.71	2.80	3.75
22.....	3.68	3.91	3.91	4.19	3.51	3.20	2.70	2.51	2.91	2.61	2.75	4.70
23.....	3.62	3.86	3.82	4.30	3.41	3.00	2.71	2.51	2.71	2.61	2.86	4.10
24.....	3.53	4.17	3.82	3.96	3.31	2.91	2.61	2.61	2.71	2.61	2.70	3.95
25.....	4.21	4.16	3.68	3.91	3.31	2.91	2.61	2.41	4.10	2.61	3.55	3.76
26.....	4.19	4.19	3.67	3.68	3.31	3.10	2.61	2.51	3.71	2.71	4.30	3.65
27.....	4.16	5.22	3.54	3.51	3.21	3.20	2.71	2.71	3.31	2.61	3.35	3.27
28.....	5.91	16.19	4.91	3.10	3.21	3.00	2.61	2.61	3.20	2.71	3.31	3.25
29.....	5.84		9.32	3.10	3.21	3.10	2.71	2.61	3.40	2.61	3.30	3.50
30.....	4.36		6.28	2.98	3.20	3.00	2.71	2.51	3.30	2.61	3.20	4.00
31.....	4.33		5.49		3.20		2.61	2.61		2.61		3.51

DAILY GAGE HEIGHT, IN FEET, OF LITTLE TENNESSEE RIVER AT JUDSON, N. C., FOR 1903  
AND 1904.

1903.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	3.41	3.54	9.63	7.10	4.00	4.60	3.25	2.80	2.55	2.32	2.38	2.38
2.....	3.55	3.60	6.92	7.15	3.95	4.55	3.25	4.35	2.95	2.32	2.40	2.30
3.....	4.02	3.66	5.93	6.90	3.90	4.55	3.25	3.90	2.55	2.31	2.65	2.25
4.....	4.08	5.82	4.98	6.75	4.15	4.50	3.50	3.10	2.50	2.35	2.60	2.28
5.....	3.90	4.73	4.65	6.65	3.95	5.70	3.25	3.10	2.60	2.30	2.98	2.40
6.....	3.70	4.73	5.39	8.70	2.85	5.65	3.35	3.00	2.50	2.32	2.75	2.42
7.....	3.65	5.41	5.52	7.95	3.85	4.72	3.35	2.90	2.45	2.33	2.52	2.30
8.....	3.62	4.89	7.27	7.20	3.80	3.90	3.40	2.80	2.40	2.40	2.48	2.28
9.....	3.30	4.82	6.53	6.50	3.75	3.85	3.30	2.75	2.45	2.35	2.45	2.40
10.....	3.35	4.90	7.39	5.90	3.70	3.85	3.25	2.75	2.50	2.33	2.40	2.42
11.....	3.45	5.41	6.80	4.75	3.70	4.95	3.60	2.80	2.40	2.35	2.42	2.22
12.....	4.35	6.40	6.72	4.65	3.70	4.36	3.80	2.85	2.45	2.37	2.53	2.22
13.....	3.00	5.29	5.93	5.85	3.65	4.20	3.75	2.75	2.40	2.36	2.55	2.62
14.....	3.65	4.96	5.71	6.55	3.60	4.10	3.60	2.70	2.40	2.40	2.52	2.70
15.....	3.55	4.31	6.42	5.50	3.60	3.90	3.35	2.80	2.75	2.32	2.50	2.50
16.....	3.50	4.30	5.18	5.45	3.60	3.80	3.20	3.50	3.60	2.33	2.45	2.38
17.....	3.48	5.73	4.98	4.95	3.70	3.65	3.35	3.95	2.60	2.48	3.25	2.35
18.....	3.45	4.98	4.93	4.75	3.70	3.60	3.25	3.00	2.55	2.72	3.35	2.22
19.....	3.43	4.81	4.80	4.53	3.70	3.55	3.15	2.80	2.50	2.50	3.32	2.25
20.....	3.40	4.72	4.73	4.53	3.60	3.55	3.10	2.80	2.50	2.40	2.60	2.82
21.....	3.42	4.36	5.29	4.45	3.65	3.55	3.00	2.70	2.45	2.35	2.52	3.05
22.....	3.40	4.31	6.03	4.44	3.55	3.45	3.50	2.65	2.45	2.32	2.50	2.75
23.....	3.41	4.22	10.28	4.44	3.50	3.40	3.00	2.65	2.40	2.33	2.48	2.68
24.....	3.49	4.22	8.92	4.44	3.45	3.35	2.95	2.60	2.40	2.33	2.45	2.55
25.....	3.60	5.46	6.29	4.43	3.45	3.35	2.90	2.60	2.38	2.38	2.42	2.60
26.....	3.61	5.72	6.20	4.47	3.30	4.25	2.85	2.55	2.39	2.30	2.42	3.00
27.....	3.54	6.29	5.64	4.46	3.20	4.15	2.85	2.55	2.36	2.30	2.38	2.45
28.....	3.58	10.63	5.10	4.20	3.20	3.50	2.80	2.50	2.37	2.38	2.23	2.68
29.....	3.57		5.60	4.10	3.80	3.30	3.00	2.50	2.35	2.34	2.50	2.56
30.....	3.58		5.60	4.00	3.90	3.20	2.95	2.55	2.33	2.35	2.42	2.50
31.....	3.59		6.65		3.90		3.10	2.50		2.36		2.43
1904.												
1.....	2.50	2.65	3.14	3.50	3.25	3.30	2.80	2.75	3.00	2.20	2.10	2.90
2.....	2.52	2.61	3.08	3.50	3.15	3.20	2.75	2.80	3.10	2.20	2.30	2.80
3.....	2.48	2.63	2.98	3.55	3.15	3.05	2.55	2.85	2.80	2.20	2.50	2.60
4.....	2.42	2.48	3.09	3.40	3.20	2.95	2.50	2.75	3.00	2.20	2.60	2.60
5.....	2.39	2.34	3.13	3.40	3.20	2.85	2.80	2.70	3.20	2.30	2.50	4.10
6.....	2.43	3.18	4.20	3.35	3.25	2.80	2.60	2.95	2.80	2.30	2.30	3.60
7.....	2.55	3.30	6.25	3.85	(*)	3.25	2.50	2.75	2.70	2.20	2.20	2.80
8.....	2.52	3.32	5.15	4.00	(*)	3.30	2.50	3.10	2.70	2.20	2.20	2.70
9.....	2.48	3.34	4.40	3.90	(*)	3.00	3.25	3.30	2.60	2.20	2.20	2.70
10.....	2.45	3.28	4.19	3.65	(*)	2.90	2.75	3.20	2.60	2.20	2.20	2.70
11.....	2.65	3.20	4.65	3.60	(*)	2.90	2.65	4.45	2.60	2.20	2.20	2.60
12.....	2.58	2.81	4.25	3.60	(*)	2.90	2.65	3.70	2.50	2.20	2.60	2.60
13.....	2.59	2.81	4.10	3.55	(*)	2.80	2.85	3.45	2.50	2.10	2.60	2.50
14.....	2.52	3.48	3.90	3.55	3.30	2.75	2.60	3.10	2.50	2.10	2.60	2.50
15.....	2.45	3.51	3.95	3.50	3.25	2.80	2.50	2.90	2.50	2.10	2.30	2.50
16.....	3.28	3.22	3.85	3.45	3.20	2.65	2.45	2.85	2.50	2.10	2.30	2.50
17.....	3.35	3.30	3.85	3.40	3.10	2.65	2.70	2.75	2.40	2.10	2.30	2.55
18.....	3.22	3.28	3.80	3.35	3.15	2.75	2.80	2.70	2.40	2.10	2.20	2.45
19.....	3.18	3.30	3.70	3.45	3.15	2.70	2.50	2.65	2.40	2.10	2.20	2.35
20.....	2.84	3.80	3.65	3.40	3.10	2.90	2.45	2.60	2.40	2.10	2.20	2.10
21.....	2.58	4.24	3.60	3.35	3.10	2.90	2.50	2.70	2.30	2.10	2.40	2.35
22.....	5.30	5.38	4.72	3.30	3.05	3.00	3.00	2.65	2.40	2.10	2.60	2.35
23.....	4.28	4.47	5.66	3.30	2.95	2.80	2.80	2.55	2.40	2.10	2.50	2.50
24.....	3.22	4.13	5.12	3.25	2.90	2.70	2.70	2.90	2.30	2.10	2.30	2.50
25.....	3.18	3.91	4.40	3.25	2.90	2.70	2.60	2.80	2.30	2.10	2.30	2.95
26.....	2.59	3.63	4.10	3.20	2.95	2.80	2.50	3.00	2.30	2.10	2.20	2.80
27.....	2.50	3.31	3.45	3.20	2.95	2.90	2.65	3.70	2.30	2.10	2.20	2.70
28.....	2.42	3.14	3.45	3.15	2.90	2.70	2.60	3.50	2.40	2.10	2.60	4.70
29.....	2.45	3.10	3.40	3.15	2.85	3.20	2.55	2.90	2.40	2.10	2.80	3.70
30.....	2.81		3.45	3.20	2.90	2.85	2.50	2.65	2.30	2.10	2.50	3.30
31.....	2.71		3.40		3.50		2.45	2.70		2.10		3.10

\*Chain stolen.

DAILY GAGE HEIGHT, IN FEET, OF LITTLE TENNESSEE RIVER AT JUDSON, N. C., FOR 1905  
AND 1906.

1905.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	2.95	3.00	3.90	3.35	4.10	3.40	3.15	3.00	2.40	2.50	2.55	2.65
2.....	2.90	3.00	3.90	3.30	3.65	3.40	3.20	2.60	3.20	2.55	2.50	2.55
3.....	2.10	2.90	3.70	3.25	-----	3.35	3.00	3.00	2.40	2.65	2.50	8.00
4.....	2.80	2.90	3.50	3.25	-----	3.25	2.90	3.50	3.00	3.50	2.50	3.85
5.....	2.70	2.75	3.40	3.25	-----	3.30	2.85	2.60	2.90	2.75	2.50	3.50
6.....	3.00	3.90	3.50	3.50	-----	3.25	2.90	3.50	2.85	2.60	2.50	3.30
7.....	3.95	3.55	3.40	3.35	4.20	3.15	3.20	2.90	2.90	2.50	2.50	4.80
8.....	3.10	3.45	3.50	3.30	4.00	3.25	2.75	2.25	2.80	2.50	2.50	3.40
9.....	2.70	8.00	3.40	3.40	4.00	3.10	2.90	3.50	2.80	2.50	2.50	6.80
10.....	3.10	5.10	4.30	3.45	3.60	3.10	3.00	3.25	2.75	2.60	2.50	6.00
11.....	3.10	4.40	4.20	3.45	3.50	3.10	4.30	4.40	2.25	3.85	2.45	4.80
12.....	8.20	4.00	4.10	3.85	3.45	3.15	7.60	6.10	2.90	3.60	2.45	4.20
13.....	6.30	4.90	4.00	3.90	3.45	3.10	5.80	3.80	2.80	3.65	2.45	3.95
14.....	4.80	4.70	3.90	4.20	3.35	3.00	4.40	3.75	2.45	2.90	2.45	3.80
15.....	4.10	4.30	3.60	3.40	3.35	3.00	4.40	3.95	2.45	2.75	2.40	3.90
16.....	3.55	3.80	3.60	3.60	4.80	3.10	4.30	3.40	2.70	2.80	2.40	3.90
17.....	3.45	4.00	3.50	3.45	4.10	3.20	4.00	3.55	2.70	2.70	2.40	3.85
18.....	3.50	3.80	3.50	3.35	4.00	3.10	3.60	3.45	2.65	2.60	2.40	3.65
19.....	3.40	3.70	3.45	3.35	3.60	3.40	3.90	3.10	2.65	2.60	2.40	3.50
20.....	3.35	4.00	3.45	3.25	3.50	3.15	3.60	3.10	2.65	2.60	3.00	4.70
21.....	3.30	6.80	4.40	3.25	3.50	3.20	3.30	3.00	2.70	2.60	2.70	3.25
22.....	3.20	5.80	4.10	3.35	3.50	3.35	3.30	3.35	2.60	2.60	2.50	3.35
23.....	3.10	5.10	4.10	3.25	3.50	3.85	3.35	3.70	2.60	2.55	2.50	4.50
24.....	3.00	4.80	3.80	3.15	4.00	3.20	3.05	3.75	2.50	2.50	2.50	4.80
25.....	2.95	4.40	3.65	3.10	3.50	2.75	3.20	3.10	2.50	2.55	2.50	4.40
26.....	2.95	4.20	3.50	3.20	3.50	3.00	4.30	3.40	2.50	3.00	2.65	4.10
27.....	2.90	4.10	3.45	3.60	4.50	3.20	3.00	3.30	2.50	3.80	2.50	3.90
28.....	2.85	3.90	3.45	3.45	3.45	3.25	2.95	3.30	2.50	2.60	2.45	3.80
29.....	2.85	-----	3.30	3.40	3.95	2.90	3.95	3.80	2.50	2.60	2.65	4.10
30.....	3.00	-----	3.50	4.60	3.95	3.00	3.85	3.10	2.45	2.55	2.90	3.80
31.....	2.90	-----	3.40	-----	3.95	-----	3.85	3.00	-----	2.55	-----	3.75
1906.												
1.....	3.75	4.50	3.70	5.10	4.00	4.60	3.40	4.70	5.10	9.40	3.85	4.15
2.....	3.30	4.40	3.60	4.80	4.10	4.60	3.30	4.75	5.20	7.60	3.80	4.10
3.....	3.55	4.20	3.75	4.55	4.10	3.65	3.30	4.45	4.10	8.00	3.80	4.05
4.....	4.30	4.20	3.75	4.40	4.10	3.60	4.60	5.00	4.15	8.00	3.80	4.00
5.....	8.00	4.20	4.20	4.30	4.10	3.65	3.90	4.50	4.25	7.00	3.75	3.90
6.....	6.00	4.10	3.95	4.25	3.75	3.90	4.60	4.95	4.40	7.90	3.70	4.00
7.....	4.70	4.00	3.80	4.15	3.20	3.50	3.95	4.55	4.40	6.90	3.65	4.20
8.....	4.50	4.00	3.95	4.15	3.85	3.40	3.95	4.25	4.50	6.00	3.60	3.90
9.....	4.60	3.90	3.90	4.00	3.75	3.30	3.80	4.00	4.25	5.70	3.60	3.90
10.....	4.25	3.80	3.80	5.00	3.65	3.20	3.80	4.00	4.00	5.50	3.60	3.90
11.....	4.10	3.60	3.70	4.55	3.20	3.20	3.65	4.00	3.90	5.20	3.80	4.80
12.....	4.75	3.80	3.60	4.50	3.10	3.40	3.90	4.80	4.50	5.00	3.75	4.30
13.....	4.40	3.80	3.60	4.20	3.60	3.80	3.80	4.85	3.20	4.90	3.50	4.10
14.....	4.40	3.80	3.60	4.15	3.50	5.00	6.10	4.85	3.90	4.80	3.55	4.00
15.....	4.30	3.70	4.80	5.00	3.35	5.30	6.30	4.25	3.80	4.70	3.60	3.95
16.....	4.30	3.60	5.60	5.00	3.40	5.10	6.30	5.50	3.75	4.60	3.50	3.75
17.....	4.40	3.55	4.60	4.90	3.35	4.60	6.30	4.00	3.60	4.50	3.60	4.10
18.....	4.40	3.65	4.25	4.65	3.25	4.20	6.80	4.40	3.50	4.45	5.40	5.30
19.....	4.10	3.65	4.45	4.65	3.30	4.00	5.00	4.50	7.10	5.50	13.50	4.70
20.....	4.00	3.50	6.00	4.45	3.30	3.90	3.15	4.50	6.60	4.80	7.70	4.70
21.....	4.00	3.50	5.10	4.15	3.30	3.75	6.20	4.75	5.80	4.60	6.10	4.50
22.....	4.70	3.90	5.70	4.20	3.25	3.70	5.40	4.10	5.00	4.50	5.50	4.50
23.....	9.00	3.60	4.45	4.10	3.20	5.50	4.20	4.10	5.00	4.40	5.10	4.20
24.....	7.00	3.50	4.30	4.00	3.10	4.40	4.85	5.20	4.90	4.30	4.90	4.10
25.....	5.90	3.60	4.30	4.00	3.15	4.30	4.25	4.40	4.75	4.25	4.70	3.00
26.....	5.50	3.50	4.25	3.90	3.20	4.20	4.50	4.20	4.70	4.20	4.50	3.10
27.....	5.40	3.55	4.20	3.85	4.70	3.75	4.50	4.20	4.60	4.10	4.40	3.00
28.....	5.20	3.60	4.25	4.15	3.80	4.60	4.50	4.30	4.60	4.05	4.30	4.50
29.....	5.00	-----	4.20	4.00	3.40	3.50	4.00	4.50	7.80	4.00	4.25	4.50
30.....	4.80	-----	5.10	4.00	3.40	3.50	4.50	6.20	12.00	4.00	4.20	4.50
31.....	4.65	-----	5.90	-----	3.30	-----	4.50	6.20	-----	3.90	-----	6.00

NOTE.—Readings July 1 to December 31 taken from vertical gage.

DAILY GAGE HEIGHT, IN FEET, OF LITTLE TENNESSEE RIVER AT JUDSON, N. C., FOR 1907.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	5.30	4.20	4.50	3.55	3.80	4.90	3.40	3.00	2.50	3.30	3.00	3.40
2.....	4.90	4.90	6.00	3.50	3.75	4.70	3.30	2.90	2.50	3.20	3.00	3.30
3.....	4.70	4.30	5.00	3.40	3.70	4.20	3.30	2.80	2.70	3.10	3.00	3.20
4.....	4.50	4.20	4.50	3.30	4.20	3.90	3.40	2.80	2.80	3.00	3.00	3.10
5.....	4.40	5.00	4.30	3.20	3.70	3.70	3.45	2.90	2.00	3.30	2.90	3.10
6.....	4.40	4.90	4.20	4.00	4.40	3.60	3.30	2.80	2.70	3.00	2.85	3.10
7.....	4.40	4.60	4.10	3.70	3.20	3.50	3.30	2.80	2.60	2.90	2.80	3.05
8.....	4.40	4.30	4.40	3.80	4.00	3.90	3.20	2.70	2.80	3.00	2.80	3.05
9.....	4.40	4.20	4.10	3.80	3.90	4.85	3.20	2.80	2.70	3.00	2.80	4.80
10.....	4.40	4.10	4.70	3.70	5.00	3.90	3.25	2.80	2.60	2.90	3.40	4.30
11.....	4.40	3.95	4.70	3.50	4.40	3.85	3.30	2.80	2.50	2.80	3.30	4.00
12.....	4.00	3.90	4.50	3.50	4.10	3.60	3.30	2.80	2.80	2.80	3.25	3.80
13.....	4.00	3.80	4.40	3.40	4.10	3.60	3.90	3.00	2.70	2.75	3.20	3.60
14.....	3.90	3.70	4.00	3.40	3.90	3.70	3.40	3.10	2.60	2.70	3.10	5.50
15.....	3.90	3.70	3.95	3.50	4.10	3.60	3.30	3.50	2.50	2.70	3.00	4.50
16.....	3.80	3.60	3.90	3.60	4.00	3.60	3.30	3.40	2.50	2.70	3.00	4.30
17.....	3.80	3.55	3.85	3.60	3.90	3.60	3.30	3.00	2.50	2.65	2.90	4.00
18.....	3.80	3.50	3.80	3.90	3.80	3.60	3.30	3.00	2.50	2.65	3.25	3.60
19.....	3.70	3.50	3.70	3.80	3.70	3.50	3.20	3.00	2.45	2.65	3.50	3.60
20.....	4.00	3.50	3.75	3.60	3.70	3.50	3.20	3.00	2.45	2.60	3.20	3.60
21.....	4.00	3.50	3.70	3.50	3.60	3.65	3.20	3.00	2.40	2.60	3.80	3.55
22.....	3.90	3.50	3.60	3.50	3.50	3.65	3.10	2.90	2.70	2.60	4.00	3.50
23.....	3.70	3.50	3.50	5.00	3.45	3.60	2.90	3.05	7.00	2.60	4.40	6.30
24.....	3.70	3.50	3.50	5.50	3.45	3.60	2.90	3.00	4.00	2.60	5.80	5.10
25.....	3.70	3.70	3.50	5.10	3.50	4.50	3.00	2.90	3.50	2.55	4.60	4.50
26.....	3.80	3.80	3.60	4.90	4.00	3.90	3.00	2.70	3.30	2.50	4.20	4.30
27.....	3.50	3.80	3.55	4.00	4.00	3.60	3.10	2.60	3.00	2.80	3.90	4.20
28.....	3.00	3.80	3.50	3.95	3.60	3.70	3.00	2.60	3.10	2.75	3.70	4.10
29.....	3.00		3.40	3.90	3.50	3.90	2.90	2.50	4.40	2.70	3.60	3.90
30.....	3.20		3.40	3.90	3.45	3.50	3.10	2.50	3.70	2.65	3.50	6.50
31.....	8.50		3.60		3.90		3.10	2.50		2.60		5.50

DAILY GAGE HEIGHT, IN FEET, OF LITTLE TENNESSEE RIVER AT JUDSON, N. C., FOR 1908.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1.....	4.90	4.10	4.50	4.30	4.80	3.50	2.90	2.90	3.05	2.60
2.....	4.50	4.40	4.40	4.20	4.70	3.50	2.90	2.90	3.00	2.50
3.....	4.30	4.30	4.50	4.10	4.50	3.50	3.00	2.90	2.95	2.50
4.....	4.20	4.25	4.40	4.00	4.10	3.40	4.00	2.90	2.90	2.50
5.....	6.00	4.20	4.40	4.10	4.10	3.45	4.00	3.00	3.00	2.50
6.....	5.00	4.50	4.30	4.20	4.00	3.40	4.10	4.00	4.00	2.45
7.....	4.70	4.20	4.20	4.10	4.10	3.45	4.10	3.50	3.30	2.45
8.....	4.40	4.10	4.10	4.00	4.20	3.40	4.70	3.40	3.10	2.40
9.....	4.30	4.00	4.00	3.95	4.20	3.30	4.00	3.40	3.00	2.40
10.....	4.20	4.20	4.00	3.90	4.20	3.30	4.20	3.30	2.95	3.20
11.....	4.10	4.50	4.00	3.80	4.10	3.60	3.60	3.00	2.90	3.00
12.....	8.50	4.90	5.00	3.70	4.00	3.40	3.50	3.00	2.85	2.80
13.....	6.50	5.20	4.50	3.60	3.90	3.40	3.50	2.90	2.90	2.70
14.....	5.10	5.30	4.45	3.55	3.90	4.00	3.50	2.85	2.90	2.60
15.....	5.00	10.90	4.40	4.70	3.90	4.70	3.40	2.80	2.80	2.55
16.....	4.70	7.90	4.40	5.00	3.90	3.60	3.40	2.85	2.70	2.50
17.....	4.80	6.50	4.30	4.50	3.90	3.40	3.30	2.80	2.70	2.50
18.....	4.55	5.50	4.00	4.20	3.90	3.35	3.20	2.80	2.70	2.50
19.....	4.40	5.30	3.90	4.30	4.40	3.30	3.50	2.85	2.70	2.50
20.....	4.30	5.10	5.10	4.20	3.10	3.30	3.10	2.80	2.70	2.50
21.....	4.20	4.90	5.10	4.00	3.20	3.40	3.00	2.95	2.70	2.50
22.....	4.15	4.70	4.60	3.90	3.20	3.30	3.60	4.00	2.65	2.45
23.....	4.10	4.40	6.00	3.90	3.10	3.10	3.00	4.00	2.65	4.00
24.....	4.00	4.40	7.50	3.70	3.60	3.10	3.00	4.05	2.60	5.00
25.....	3.90	4.50	6.20	7.00	4.00	3.10	3.00	5.40	2.60	5.20
26.....	3.90	4.40	5.50	7.00	4.10	3.00	3.00	4.45	2.50	3.00
27.....	3.90	4.40	5.20	6.50	4.00	3.00	3.50	3.80	2.50	2.90
28.....	4.00	4.20	5.00	5.00	4.20	3.00	3.40	3.50	2.50	3.00
29.....	4.00	4.20	4.70	4.70	4.00	2.90	3.00	3.30	2.70	4.00
30.....	3.95	.....	4.50	4.70	4.00	2.90	3.00	3.20	2.60	3.60
31.....	3.90	.....	4.40	.....	3.60	.....	2.90	3.10	.....	3.20

RATING TABLE FOR LITTLE TENNESSEE RIVER AT JUDSON, N. C., FOR 1896-1899.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
2.0	225	4.0	2,650	6.0	6,750	8.4	13,700
2.1	250	4.1	2,835	6.1	6,995	8.6	14,475
2.2	300	4.2	3,020	6.2	7,240	8.8	15,275
2.3	370	4.3	3,205	6.3	7,485	9.0	16,100
2.4	445	4.4	3,390	6.4	7,730	9.2	16,950
2.5	525	4.5	3,575	6.5	7,975	9.4	17,825
2.6	610	4.6	3,770	6.6	8,240	9.6	18,725
2.7	705	4.7	3,965	6.7	8,505	9.8	19,500
2.8	805	4.8	4,160	6.8	8,770	10.0	20,600
2.9	925	4.9	4,355	6.9	9,035	10.2	21,600
3.0	1,060	5.0	4,550	7.0	9,300	10.4	22,600
3.1	1,205	5.1	4,760	7.1	9,580	10.6	23,600
3.2	1,360	5.2	4,970	7.2	9,860	10.8	24,600
3.3	1,515	5.3	5,180	7.3	10,140	11.0	25,600
3.4	1,670	5.4	5,360	7.4	10,430	11.2	26,600
3.5	1,825	5.5	5,600	7.5	10,700	11.4	27,600
3.6	1,990	5.6	5,830	7.6	11,010	11.6	28,600
3.7	2,155	5.7	6,060	7.8	11,600	11.8	29,600
3.8	2,320	5.8	6,290	8.0	12,275	12.0	30,600
3.9	2,485	5.9	6,520	8.2	12,975		

RATING TABLE FOR LITTLE TENNESSEE RIVER AT JUDSON, N. C., FOR 1900.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
2.2	325	3.6	1,935	5.0	4,650	8.5	14,200
2.4	427	3.8	2,315	5.5	5,650	9.0	16,200
2.6	506	4.0	2,695	6.0	6,720	9.5	18,450
2.8	628	4.2	3,075	6.5	7,845	10.0	20,700
3.0	1,060	4.4	3,455	7.0	9,030	11.0	27,400
3.2	1,310	4.6	3,850	7.5	10,420	12.0	37,400
3.4	1,595	4.8	4,250	8.0	12,200	13.0	49,000

RATING TABLE FOR LITTLE TENNESSEE RIVER AT JUDSON, N. C., FOR 1901.

2.2	325	3.6	1,800	5.0	4,250	6.4	7,560
2.4	425	3.8	2,100	5.2	4,685	6.6	8,050
2.6	565	4.0	2,400	5.4	5,155	6.8	8,540
2.8	785	4.2	2,770	5.6	5,625	7.0	9,030
3.0	1,000	4.4	3,140	5.8	6,100		
3.2	1,250	4.6	3,510	6.0	6,580		
3.4	1,500	4.8	3,880	6.2	7,070		

RATING TABLE FOR LITTLE TENNESSEE RIVER AT JUDSON, N. C., FOR 1902-1905.

2.20	335	3.40	1,580	4.60	3,580	6.60	8,050
2.30	405	3.50	1,720	4.70	3,780	6.80	8,540
2.40	485	3.60	1,860	4.80	3,980	7.00	9,050
2.50	575	3.70	2,000	4.90	4,180	7.20	9,580
2.60	675	3.80	2,140	5.00	4,380	7.40	10,100
2.70	775	3.90	2,300	5.20	4,820	7.60	10,780
2.80	875	4.00	2,460	5.40	5,260	7.80	11,470
2.90	985	4.10	2,620	5.60	5,700	8.00	12,200
3.00	1,100	4.20	2,800	5.80	6,140	8.50	14,200
3.10	1,220	4.30	2,980	6.00	6,580	9.00	16,200
3.20	1,340	4.40	3,180	6.20	7,070	9.50	18,450
3.30	1,460	4.50	3,380	6.40	7,560	10.00	20,700

NOTE.—The above table is based on forty discharge measurements made during 1896-1905. It is well defined between gage heights 2.2 feet and 5 feet. The table has been extended beyond these limits. Above gage height 10 feet the rating curve is a tangent, the difference being 480 per tenth.

RATING TABLE FOR LITTLE TENNESSEE RIVER AT JUDSON, N. C., FOR 1906.

3.00	1,000	4.20	2,580	5.40	4,920	7.20	9,670
3.10	1,100	4.30	2,750	5.50	5,150	7.40	10,290
3.20	1,200	4.40	2,920	5.60	5,380	7.60	10,930
3.30	1,310	4.50	3,100	5.70	5,620	7.80	11,600
3.40	1,430	4.60	3,280	5.80	5,860	8.00	12,300
3.50	1,550	4.70	3,470	5.90	6,110	8.20	13,030
3.60	1,680	4.80	3,660	6.00	6,360	8.40	13,800
3.70	1,820	4.90	3,860	6.20	6,970	8.60	14,600
3.80	1,960	5.00	4,060	6.40	7,390	8.80	15,400
3.90	2,110	5.10	4,270	6.60	7,930	9.00	16,200
4.00	2,260	5.20	4,480	6.80	8,490	10.00	20,700
4.10	2,420	5.30	4,700	7.00	9,070	11.00	25,500

NOTE.—The above table is applicable only for open-channel conditions. It is based on five discharge measurements made during 1906 and on the general form of the 1905 curve. It is well defined between gage heights 3.0 feet and 11.0 feet. Above gage height 10.0 feet the rating curve is a tangent, the difference being 480 per tenth.



RATING TABLE FOR LITTLE TENNESSEE RIVER AT JUDSON, N. C., FOR 1907.

Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).
2.40	600	3.50	1,580	4.60	3,280	5.70	5,620
2.50	670	3.60	1,700	4.70	3,470	5.80	5,880
2.60	740	3.70	1,830	4.80	3,660	5.90	6,110
2.70	810	3.80	1,970	4.90	3,860	6.00	6,360
2.80	890	3.90	2,110	5.00	4,060	6.20	6,870
2.90	970	4.00	2,260	5.10	4,270	6.40	7,300
3.00	1,060	4.10	2,420	5.20	4,480	6.60	7,930
3.10	1,150	4.20	2,580	5.30	4,700	6.80	8,460
3.20	1,250	4.30	2,750	5.40	4,920	7.00	9,070
3.30	1,350	4.40	2,920	5.50	5,150		
3.40	1,460	4.50	3,100	5.60	5,380		

ESTIMATED MONTHLY DISCHARGE OF LITTLE TENNESSEE RIVER AT JUDSON, N. C.

[Drainage area, 675 square miles.]

Month.	Discharge in Second-feet.			Run-off.		
	Maximum.	Minimum.	Mean.	Total in Acre-feet.	Second- feet per Square Mile.	Depth in Inches.
1897.						
January.....	4,160	1,670	2,303	147,141	3.55	4.00
February.....	14,475	1,825	4,631	257,193	6.86	7.14
March.....	16,950	1,907	7,689	472,781	11.30	13.13
April.....	11,938	1,282	4,403	261,997	6.52	7.27
May.....	4,970	1,360	2,444	150,277	3.62	4.17
June.....	4,160	925	2,000	119,008	2.96	3.30
July.....	4,970	1,515	2,379	146,280	3.52	4.06
August.....	2,650	755	1,676	103,054	2.48	2.86
September.....	925	407	724	43,061	1.07	1.19
October.....	3,770	407	832	51,158	1.23	1.42
November.....	1,515	610	767	45,640	1.14	1.27
December.....	3,770	567	1,542	94,814	2.28	2.63
The year.....	16,950	407	2,623	1,892,424	3.89	52.53
1898.						
January.....	5,830	705	1,570	96,536	2.33	2.60
February.....	1,515	370	799	44,374	1.18	1.53
March.....	12,338	370	1,796	110,432	2.66	2.97
April.....	6,290	1,060	2,416	143,762	3.58	3.99
May.....	3,113	335	1,885	115,905	2.79	3.22
June.....	805	300	564	33,560	0.84	0.93
July.....	8,770	275	1,246	76,614	1.85	2.13
August.....	22,600	1,592	5,836	358,844	8.65	9.97
September.....	30,350	1,670	4,518	268,839	6.69	7.46
October.....	38,100	1,747	5,812	357,368	8.61	9.93
November.....	3,770	2,405	2,847	169,408	4.21	4.70
December.....	4,550	1,825	2,190	134,659	3.24	3.74
The year.....	38,100	275	2,623	1,910,301	3.89	53.26

ESTIMATED MONTHLY DISCHARGE OF LITTLE TENNESSEE RIVER AT JUDSON, N. C.—*Continued.*  
 [Drainage area, 675 square miles.]

Month.	Discharge in Second-feet.			Total in Acre-feet.	Run-off.	
	Maxi- mum.	Mini- mum.	Mean.		Second- feet per Square Mile.	Depth in Inches.
1899.						
January.....	3,112	1,825	2,171	133,490	3.22	3.71
February.....	27,600	1,907	7,949	441,465	11.77	12.26
March.....	35,600	1,990	6,995	430,106	10.36	11.94
April.....	4,160	1,747	2,209	131,445	3.27	3.65
May.....	6,060	370	1,978	121,622	2.93	3.38
June.....	8,505	335	1,672	99,491	2.48	2.77
July.....	3,390	705	1,739	106,927	2.58	2.97
August.....	4,550	335	1,196	73,539	1.77	2.04
September.....	3,205	300	801	47,663	1.19	1.33
October.....	5,830	445	921	56,630	1.36	1.57
November.....	1,825	445	729	43,379	1.08	1.20
December.....	13,700	445	1,423	87,497	2.11	2.43
The year.....	35,600	300	2,482	1,773,254	3.68	49.25
1900.						
January.....	3,455	375	735	48,268	1.16	1.34
February.....	31,900	654	2,982	165,612	4.42	4.60
March.....	7,615	2,125	3,034	186,553	4.49	5.17
April.....	6,500	770	1,962	116,747	2.91	3.25
May.....	3,650	538	1,245	76,552	1.84	2.12
June.....	6,500	1,595	3,464	206,122	5.13	5.73
July.....	6,060	1,595	3,005	184,770	4.45	5.13
August.....	2,125	1,180	1,422	87,435	2.11	2.44
September.....	1,380	1,180	1,270	75,570	1.88	2.10
October.....	8,305	480	1,429	87,866	2.12	2.45
November.....	4,250	828	1,244	74,023	1.84	2.05
December.....	6,830	1,180	2,274	139,823	3.37	3.89
The year.....	31,900	375	2,010	1,449,341	2.98	40.27
1901.						
January.....	13,800	1,250	2,349	.....	3.48	4.01
February.....	2,955	1,250	1,642	.....	2.43	2.53
March.....	23,650	1,185	2,277	.....	4.86	5.60
April.....	14,000	1,725	3,987	.....	5.91	6.59
May.....	40,580	1,250	3,762	.....	5.57	6.43
June.....	7,560	1,435	2,740	.....	4.06	4.53
July.....	3,510	1,125	1,745	.....	2.59	2.99
August.....	22,125	1,125	6,183	.....	9.16	10.56
September.....	3,140	1,250	1,550	.....	2.30	2.57
October.....	3,325	1,125	1,374	.....	2.04	2.36
November.....	1,125	785	909	.....	1.35	1.51
December.....	57,540	735	8,120	.....	12.00	13.83
The year.....	57,540	735	3,136	.....	4.65	63.51

ESTIMATED MONTHLY DISCHARGE OF LITTLE TENNESSEE RIVER AT JUDSON, N. C.—*Continued.*  
 [Drainage area, 675 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maximum.	Minimum.	Mean.	Second-feet per Square Mile.	Depth in Inches.
1902.					
January.....	13,800	1,790	3,827	5.67	6.54
February.....	50,400	2,220	5,036	7.46	7.77
March.....	17,550	1,790	4,079	6.04	6.96
April.....	4,820	1,100	3,032	4.49	5.01
May.....	3,580	975	1,592	2.36	2.72
June.....	2,140	975	1,319	1.95	2.18
July.....	2,300	675	1,010	1.50	1.73
August.....	775	475	637	.93	1.07
September.....	2,620	475	964	1.43	1.60
October.....	1,580	675	846	1.25	1.44
November.....	3,780	575	1,128	1.67	1.86
December.....	4,180	1,220	1,939	2.87	3.31
The year.....	50,400	475	2,117	3.14	42.19
1903.					
January.....	3,080	1,100	1,830	2.71	3.12
February.....	23,820	1,790	4,908	7.27	7.57
March.....	22,140	3,680	7,521	11.14	12.84
April.....	15,000	2,400	5,782	8.57	9.56
May.....	2,710	1,340	1,991	2.95	3.40
June.....	5,920	1,340	2,631	3.90	4.35
July.....	2,140	875	1,389	2.06	2.37
August.....	3,080	575	1,023	1.53	1.75
September.....	1,860	445	605	.90	1.00
October.....	775	405	459	.68	.78
November.....	1,520	370	609	.99	1.10
December.....	1,160	335	575	.85	.98
The year.....	23,820	335	2,449	3.63	43.82
1904.					
January.....	5,040	477	984	1.46	1.68
February.....	5,216	437	1,620	2.40	2.50
March.....	7,192	1,077	2,617	3.88	4.47
April.....	2,460	1,280	1,655	2.45	2.73
May.....	1,720	930	1,268	1.88	2.17
June.....	1,460	725	992	1.47	1.64
July.....	1,400	530	724	1.07	1.23
August.....	3,280	625	1,112	1.65	1.90
September.....	1,340	405	642	.951	1.06
October.....	405	275	300	.444	.512
November.....	875	275	472	.699	.780
December.....	3,780	275	964	1.43	1.65
The year.....	7,192	275	1,112	1.65	22.41

ESTIMATED MONTHLY DISCHARGE OF LITTLE TENNESSEE RIVER AT JUDSON, N. C.—*Continued.*  
 [Drainage area, 675 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maxi- mum.	Mini- mum.	Mean.	Second- feet per Square Mile.	Depth in Inches.
1905.					
January.....	13,000	275	1,909	2.83	3.26
February.....	12,200	825	3,196	4.74	4.94
March.....	3,180	1,460	2,013	2.98	3.44
April.....	3,580	1,220	1,681	2.49	2.78
May*.....	3,980	1,520	2,150	3.19	3.68
June.....	2,220	825	1,326	1.96	2.19
July.....	10,780	825	2,177	3.23	3.72
August.....	6,825	370	1,694	2.51	2.89
September.....	1,340	370	734	1.09	1.22
October.....	2,220	575	905	1.24	1.54
November.....	1,100	485	602	.892	.995
December.....	12,200	625	2,997	4.44	5.12
The year.....	13,000	275	1,782	2.64	35.78
1906.					
January.....	16,200	1,310	4,080	6.04	6.96
February.....	3,100	1,550	2,010	2.98	3.10
March.....	6,360	1,680	2,940	4.36	5.03
April.....	4,270	2,030	2,900	4.30	4.80
May.....	3,470	1,100	1,650	2.44	2.81
June.....	5,150	1,200	2,420	3.59	4.00
July.....	8,490	1,150	3,450	5.11	5.89
August.....	6,870	2,260	3,380	5.01	5.78
September.....	30,300	1,200	4,490	6.65	7.42
October.....	18,000	2,110	5,380	7.97	9.19
November.....	37,500	1,550	4,050	6.00	6.60
December.....	6,360	1,000	2,650	3.93	4.53
The year.....	37,500	1,000	3,290	4.86	66.20
1907.					
January.....	4,700	1,060	2,340	3.47	4.00
February.....	4,060	1,580	2,240	3.32	3.46
March.....	6,360	1,460	2,410	3.57	4.12
April.....	5,150	1,250	2,100	3.11	3.47
May.....	4,060	1,250	2,080	3.08	3.55
June.....	3,860	1,580	2,060	3.05	3.40
July.....	2,110	970	1,280	1.90	2.19
August.....	1,580	670	964	1.43	1.65
September.....	9,070	600	1,260	1.87	2.09
October.....	1,350	670	897	1.33	1.53
November.....	5,860	890	1,620	2.40	2.68
December.....	7,660	1,100	2,610	3.87	4.46
The year.....	9,070	600	1,820	2.70	36.60

\*Mean for 27 days taken as mean for month.

NOTE.—Values for 1906 are good.

## LITTLE TENNESSEE RIVER AT FRANKLIN, N. C.

This station was established June 12, 1907. It is located at the iron wagon bridge about  $\frac{1}{2}$  mile northeast of Franklin.

The gage is a vertical rod spiked to a tree on the left bank, about 200 feet above the bridge. Discharge measurements are made from the Franklin single-span iron wagon bridge.

The river is about 126 feet wide. The channel is slightly curved for about 300 feet above and below the bridge. The current is swift, and the bottom rocky and probably permanent. Both banks are about 15 feet high and probably do not overflow.

The bench mark is the top of the upstream end of the second iron floor beam from the right end of the iron span; elevation, 18.54 feet.

## DISCHARGE MEASUREMENTS OF LITTLE TENNESSEE RIVER AT FRANKLIN, N. C.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage (Height Feet).	Discharge (Second- feet).
1907.						
June 12	F. A. Murray	126	267	2.57	1.84	687
July 17	do.	125	245	2.24	1.56	550
July 17	B. M. Hall, Jr.	125	245	2.23	1.56	547
Aug. 28	Frank P. Thomas	123	215	1.92	1.21	414
Aug. 28	do.	123	217	1.97	1.20	428
Aug. 28	F. A. Murray	112	185	1.90	1.13	351
Nov. 8	do.	112	182	1.91	1.19	348
Nov. 9	do.	112	182	1.88	1.17	342

DAILY GAGE HEIGHT, IN FEET, OF LITTLE TENNESSEE RIVER AT FRANKLIN, N. C., FOR 1907.

Day.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....		1.80	1.25	1.05	1.70	1.10	2.00
2.....		1.80	1.25	1.00	1.50	1.10	2.10
3.....		1.75	1.25	1.00	1.45	1.10	2.30
4.....		2.00	1.25	1.05	1.40	1.10	2.30
5.....		1.90	1.20	1.10	1.35	1.10	2.40
6.....		1.70	1.20	1.10	1.30	1.10	2.45
7.....		1.70	1.15	1.10	1.30	1.00	2.40
8.....		1.65	1.15	1.10	1.25	2.00	2.60
9.....		1.60	1.10	1.10	1.20	1.80	2.65
10.....		1.60	1.10	1.05	1.15	1.80	2.65
11.....		1.60	1.10	1.10	1.10	1.80	2.60
12.....	1.85	1.80	1.40	1.05	1.10	1.70	2.60
13.....	1.80	1.85	1.40	1.00	1.05	1.65	2.60
14.....	2.00	1.75	1.35	1.00	1.00	1.65	2.50
15.....	1.85	1.70	1.60	1.00	1.00	1.65	2.85
16.....	1.80	1.70	1.55	1.00	1.00	1.70	3.00
17.....	1.70	1.65	1.70	1.00	1.05	2.00	3.00
18.....	1.65	1.60	2.00	1.00	1.00	1.90	3.20
19.....	1.80	1.55	1.80	.95	1.00	1.90	3.30
20.....	1.80	1.50	1.70	.90	1.00	1.90	3.40
21.....	1.70	1.50	1.60	.90	1.00	1.85	3.40
22.....	1.65	1.45	1.55	.90	1.00	1.80	3.30
23.....	1.80	1.40	1.50	6.70	1.00	1.80	3.20
24.....	2.30	1.40	1.40	2.60	1.00	1.80	3.00
25.....	1.90	1.40	1.35	2.00	1.00	1.80	3.00
26.....	1.80	1.35	1.25	1.60	1.00	2.00	2.95
27.....	1.75	1.40	1.20	1.50	1.10	2.00	2.90
28.....	1.80	1.35	1.15	2.70	1.10	2.00	2.85
29.....	2.10	1.35	1.10	2.50	1.10	2.00	2.80
30.....	2.00	1.30	1.05	2.00	1.10	2.00	2.75
31.....		1.30	1.05		1.10		2.70

DAILY GAGE HEIGHT, IN FEET, OF LITTLE TENNESSEE RIVER AT FRANKLIN, N. C., FOR 1908.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1.....	2.70	2.70	2.70	2.50	3.00	2.30	1.80	1.70	2.05	1.20
2.....	2.70	2.60	2.70	2.45	2.90	2.20	1.80	1.60	2.00	1.15
3.....	2.70	2.55	2.65	2.45	2.80	2.50	1.85	1.55	1.95	1.20
4.....	2.70	2.50	2.60	2.40	2.70	2.30	2.90	1.55	1.95	1.20
5.....	4.00	3.00	2.55	2.50	2.65	2.25	2.40	1.50	2.30	1.20
6.....	3.60	2.50	2.50	2.40	2.60	2.20	2.10	1.90	2.10	1.20
7.....	3.50	2.45	2.45	2.35	3.90	2.20	2.00	1.85	2.00	1.15
8.....	3.35	2.40	2.45	2.30	3.00	2.20	2.20	1.85	1.90	1.15
9.....	3.20	2.40	2.40	2.25	2.70	2.20	2.80	1.80	1.80	1.50
10.....	2.70	2.35	2.40	2.20	2.65	2.15	3.00	1.70	1.80	2.40
11.....	3.00	3.20	3.00	2.15	2.60	2.10	2.90	1.65	1.75	1.50
12.....	7.10	2.70	2.70	2.10	2.55	2.10	2.10	1.55	1.70	1.30
13.....	5.20	2.85	2.60	2.05	2.45	2.00	2.00	1.50	1.60	1.20
14.....	4.60	2.75	2.55	2.00	2.35	2.00	2.00	1.50	1.55	1.20
15.....	3.30	9.70	2.50	4.10	2.30	1.95	1.95	1.45	1.50	1.15
16.....	3.20	6.10	2.45	3.50	2.30	2.90	2.10	1.45	1.45	1.20
17.....	2.70	5.20	2.40	2.95	2.30	2.40	2.00	1.45	1.45	1.20
18.....	2.50	4.00	2.35	2.60	2.25	2.25	1.90	1.55	1.35	1.20
19.....	2.50	4.10	2.30	2.55	2.20	2.10	1.85	1.50	1.30	1.20
20.....	2.50	3.70	2.50	2.50	2.90	2.00	1.90	1.50	1.30	1.20
21.....	2.45	3.20	2.30	2.45	2.40	1.85	1.85	1.45	1.30	1.20
22.....	2.40	2.90	2.90	2.40	2.25	2.00	1.85	2.70	1.25	1.20
23.....	2.35	2.85	3.40	2.35	2.20	2.00	1.75	2.50	1.25	2.70
24.....	2.30	2.60	6.00	2.20	2.30	2.00	1.70	2.80	1.20	1.70
25.....	2.30	3.00	4.90	7.00	2.50	1.95	1.65	2.60	1.20	1.70
26.....	2.30	3.10	3.00	4.70	2.20	1.90	1.55	2.50	1.20	1.30
27.....	2.30	3.00	2.70	4.20	2.55	1.90	1.55	2.45	1.15	1.20
28.....	2.30	3.00	2.60	3.70	2.30	1.85	2.00	2.30	1.30	1.50
29.....	2.25	2.70	2.60	3.35	2.30	1.85	1.90	2.20	1.25	2.70
30.....	2.20		2.55	3.10	2.20	1.85	1.85	2.10	1.25	2.20
31.....	3.00		2.50				1.75	2.10		1.70

RATING TABLE FOR LITTLE TENNESSEE RIVER AT FRANKLIN, N. C., FOR 1907 AND 1908.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
0.90	255	1.20	380	1.50	520	1.80	670
0.95	275	1.25	402	1.55	545	1.85	695
1.00	295	1.30	425	1.60	570	1.90	720
1.05	315	1.35	447	1.65	595	1.95	745
1.10	335	1.40	470	1.70	620	2.00	760
1.15	357	1.45	495	1.75	645		

## CHEOAH RIVER NEAR MILLSAPS, N. C.

This station was established on August 24, 1907. It is located about 500 feet above the mouth of Snowbird Creek, which is a large tributary.

The gage is a vertical rod attached to a maple tree on the right bank of the river, at the boat landing.

Discharge measurements are made from a boat or by wading.

Measurements are also made of Snowbird Creek, which, together with those at the gage, give the flow of the river below the junction. The records published for the station are for the Cheoah River above Snowbird Creek.

This station is about 12 miles north of Andrews, N. C., from which point it is generally reached by special conveyance.

## DISCHARGE MEASUREMENTS OF CHEOAH RIVER NEAR MILLSAPS, N. C.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1907.						
Aug. 24	F. A. Murray	64	101	0.98	1.50	99
Oct. 16	Olin P. Hall	61	88	0.77	1.30	68

## DISCHARGE MEASUREMENTS OF SNOWBIRD CREEK NEAR MILLSAPS, N. C.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1907.						
Aug. 24	F. A. Murray	58	94	1.16	*1.50	109
Oct. 16	Olin P. Hall	60	86	1.15	*1.30	99

\*Gage height from gage on Cheoah River.



DAILY GAGE HEIGHT, IN FEET, OF CHEOAH RIVER NEAR MILLSAPS, N. C., FOR 1907.

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....		1.40	1.35	1.30	1.50	17.....		1.10	1.25	1.50	2.00
2.....		1.35	1.50	2.00	1.75	18.....		1.10	1.30	1.75	1.90
3.....		1.30	1.40	1.50	1.80	19.....		1.10	1.25	1.50	1.80
4.....		1.25	1.35	1.25	1.60	20.....		1.10	1.30	1.60	1.75
5.....		1.20	1.40	1.30	1.75	21.....		1.90	1.25	1.50	1.55
6.....		1.20	1.45	1.30	1.50	22.....		1.50	1.20	1.55	1.75
7.....		1.40	1.40	1.35	1.75	23.....		1.10	1.25	3.00	1.85
8.....		1.25	1.50	1.30	1.60	24.....	1.50	1.40	1.30	2.00	1.90
9.....		1.30	1.45	1.50	2.00	25.....	1.50	1.20	1.25	1.80	1.80
10.....		1.20	1.40	2.20	1.50	26.....	1.40	1.35	1.20	2.00	2.00
11.....		1.60	1.40	1.75	1.75	27.....	1.30	1.75	1.50	1.70	2.10
12.....		1.20	1.45	1.60	1.85	28.....	1.30	1.25	1.40	1.80	1.90
13.....		1.25	1.40	1.60	2.00	29.....	1.30	1.30	1.30	1.80	1.90
14.....		1.15	1.45	1.50	1.75	30.....	1.30	1.40	1.25	1.60	5.50
15.....		1.20	1.30	1.75	1.85	31.....	1.20		1.30		3.80
16.....		1.15	1.30	1.50	1.70						

DAILY GAGE HEIGHT, IN FEET, OF CHEOAH RIVER NEAR MILLSAPS, N. C., FOR 1908.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1.....	2.50	2.00	2.00	2.00	2.00	1.50	17.....	2.75	3.00	2.00	1.50	2.00	1.40
2.....	2.25	2.00	2.00	2.00	2.00	1.50	18.....	2.50	2.50	1.90	1.50	2.00	1.40
3.....	2.00	2.50	2.10	2.00	2.00	2.00	19.....	2.75	2.75	2.00	1.50	3.00	1.40
4.....	2.00	2.00	2.20	1.95	2.00	1.50	20.....	2.60	2.60	2.00	1.50	2.50	1.40
5.....	3.50	2.00	2.10	1.90	2.50	1.50	21.....	2.65	2.20	2.50	2.00	2.00	1.40
6.....	2.75	1.90	2.00	1.90	2.00	1.50	22.....	2.20	2.10	2.00	2.00	2.00	1.40
7.....	2.25	2.00	1.90	1.95	2.00	1.50	23.....	2.15	1.90	2.00	2.00	2.00	1.40
8.....	2.50	2.10	2.00	1.95	2.00	1.50	24.....	2.10	2.10	3.00	9.00	2.50	1.35
9.....	2.90	2.15	2.00	1.95	2.00	1.50	25.....	2.00	2.00	2.50	3.00	2.00	1.20
10.....	2.70	2.00	2.00	1.90	2.00	2.50	26.....	2.00	2.00	2.20	3.50	2.00	1.30
11.....	2.90	2.00	1.90	1.90	2.00	2.00	27.....	2.00	2.00	2.00	2.40	1.50	1.30
12.....	2.80	2.50	2.00	1.50	2.50	1.50	28.....	2.90	2.10	2.00	2.00	1.50	1.30
13.....	2.80	2.75	2.00	1.50	2.40	1.50	29.....	2.80	2.20	2.10	2.00	1.50	1.30
14.....	2.70	2.90	2.00	1.40	2.45	1.50	30.....	2.70		2.50	2.00	1.50	1.30
15.....	2.60	6.00	1.90	1.45	2.00	1.45	31.....	2.50		2.00		1.50	
16.....	2.25	3.00	2.00	1.45	2.00	1.45							

RATING TABLE FOR CHEOAH RIVER NEAR MILLSAPS, N. C., FOR 1907 AND 1908.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.10	40	1.30	68	1.50	99	1.70	132
1.15	47	1.35	75	1.55	107	----	---
1.20	54	1.40	83	1.60	115	----	---
1.25	61	1.45	91	1.65	123	----	---

## TUCKASEEGEE RIVER AT BRYSON, N. C.

This station was originally established in June, 1896, at the Southern Railway bridge about 3 miles above Bryson, N. C., just below Governor Island post-office. This station was abandoned March 25, 1897, on account of the poor section. The present station was established November 7, 1897, at the highway bridge in the town of Bryson, N. C.

The channel is straight for about 600 feet above and below the station. The water is moderately swift, but the current is obstructed by the remnants of two old bridge piers. The right bank is low at the bridge and overflows to a slight extent, but all water passes beneath the bridge and its approach. The left bank is high and rocky and does not overflow. The bed is of gravel and sand, and is fairly constant.

Discharge measurements are made from the sidewalk on the downstream side of the single-span steel highway bridge. The initial point for soundings is the end of the handrail at the left bank on the downstream side of the bridge.

The gage is a vertical rod bolted to the north pier on the right bank at the downstream side of the bridge. It is read once each day by J. M. Welch. The gage is referred to bench marks as follows: (1) A copper bolt set in the stone sill beneath the large window in the northwest corner of D. K. Collins' brick store, about 80 feet east of the northeast corner of the county courthouse; elevation, 22.30 feet. (2) A chisel mark on the top of the handrail on the downstream footway, 6 inches to the right of the post connected with the downstream end of the first floor beam from the right-bank end of the main span; elevation, 21.56 feet. Elevations refer to datum of the gage.

## DISCHARGE MEASUREMENTS OF TUCKASEEGEE RIVER AT BRYSON, N. C.

Date.	Hydrographer.	Meter Number.	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second-feet).
1897.						
Oct. 28	A. P. Davis.....	94	518	0.33	1.00	168
1898.						
Jan. 19	E. W. Myers.....	2154	1,217	1.78	2.20	2,175
Jan. 20	.....do.....	2154	1,396	2.64	3.30	3,695
Sept. 3	.....do.....	9	2,420	7.83	6.95	18,959
Sept. 4	.....do.....	9	1,843	3.40	3.92	6,059
Sept. 5	.....do.....	9	1,914	6.15	5.00	11,777
Sept. 5	.....do.....	9	1,615	5.56	4.50	9,086

## DISCHARGE MEASUREMENTS OF TUCKASEEGEE RIVER AT BRYSON, N. C.—Continued.

Date.	Hydrographer.		Gage Height (Feet).	Discharge (Second-foot).	
1899.					
Feb. 26			7.00	19,160	
June 17			2.00	1,216	
June 19			1.80	712	
Sept. 20			1.25	376	
Sept. 20			1.25	360	
Oct. 28			1.10	404	
Oct. 28			1.10	460	
Dec. 5			1.20	479	
Dec. 28			1.70	1,010	
1900.					
Feb. 9			2.95	3,316	
Mar. 29			2.50	2,321	
Apr. 27			2.65	2,829	
May 24			1.80	1,300	
June 27			2.60	2,673	
July 7			2.00	1,472	
Aug. 3			1.00	920	
Sept. 8			1.20	508	
Oct. 27			1.00	942	
Nov. 16			1.20	503	
Dec. 12			1.50	908	
Dec. 12			1.50	903	
Dec. 26			1.60	960	
Date.	Hydrographer.	Area of Section (Square Feet).	Gage Height (Feet).	Discharge (Second-foot).	
1901.					
Jan. 12	R. E. Shuford	---	5.45	10,420	
Feb. 22	do.	---	1.60	906	
Apr. 17	E. W. Myers	---	2.43	2,459	
May 27	R. E. Shuford	---	3.00	3,926	
July 11	do.	---	1.65	1,024	
Aug. 17	do.	---	5.40	9,512	
Sept. 19	E. W. Myers	---	2.25	2,048	
Nov. 7	R. E. Shuford	---	1.35	853	
Dec. 11	do.	---	1.40	910	
Date.	Hydrographer.	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second-foot).
1902.					
Aug. 11	B. S. Drane	784	.59	1.05	466
Aug. 22	do.	769	.61	1.00	465
Sept. 17	do.	788	.66	1.00	520
Oct. 23	do.	806	.68	1.15	546

## DISCHARGE MEASUREMENTS OF TUCKASEEGEE RIVER AT BRYSON, N. C.—Continued.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1903.						
Mar. 19	E. W. Myers.....	---	1,149	---	2.50	2,471
Mar. 19	do.....	---	1,151	---	2.50	2,484
Mar. 27	B. S. Drane.....	---	1,381	---	4.35	4,435
Apr. 23	do.....	---	1,247	---	2.78	2,923
Apr. 24	do.....	---	1,197	---	2.63	2,748
Apr. 25	E. W. Myers.....	---	1,217	---	2.70	2,928
June 26	do.....	---	930	---	1.73	1,299
June 27	do.....	---	920	---	1.70	1,225
Aug. 17	B. S. Drane.....	---	806	---	1.25	659
Aug. 18	do.....	---	869	---	1.49	955
Aug. 18	do.....	---	847	---	1.41	794
Oct. 9	do.....	---	797	---	1.16	607
Oct. 12	do.....	---	755	---	.95	419
1904.						
Feb. 18	B. S. Drane.....	189	865	0.92	1.31	759
Feb. 20	do.....	189	937	1.32	1.82	1,239
Feb. 23	M. R. Hall.....	189	968	1.82	2.04	1,800
Mar. 19	B. S. Drane.....	188	949	1.35	1.74	1,281
Mar. 22	do.....	190	1,079	1.92	2.29	2,068
May 26	do.....	290	882	1.07	1.41	944
Aug. 15	do.....	187	821	1.14	1.41	940
Aug. 16	do.....	188	869	1.47	1.65	1,274
Sept. 30	do.....	182	701	.65	1.00	456
Oct. 1	do.....	182	701	.60	.98	422
Oct. 12	do.....	182	730	.75	1.11	550
Dec. 14	do.....	182	721	.70	1.05	502
1905.						
Apr. 14	B. S. Drane.....	190	963	1.62	1.91	1,563
Apr. 15	do.....	190	955	1.54	1.85	1,499
June 15	O. P. Hall.....	186	804	1.08	1.45	868
Oct. 14	do.....	182	844	.71	1.20	602
1906.						
Feb. 10	O. P. Hall.....	190	951	---	1.78	1,370
Apr. 17	do.....	190	1,130	---	2.67	2,830
June 9	do.....	190	888	---	1.63	1,180
Nov. 6	do.....	190	866	---	1.68	1,230
1907.						
May. 24	F. A. Murray.....	190	950	1.52	1.80	1,442
Aug. 23	F. P. Thomas.....	190	827	1.22	1.37	1,008
Oct. 19	Olin P. Hall.....	190	834	0.82	1.22	686

DAILY GAGE HEIGHT, IN FEET, OF TUCKASEEGEE RIVER AT BRYSON, N. C., FOR 1897.

Day.	Jan.	Feb.	Mar.	Nov.	Dec.	Day.	Jan.	Feb.	Mar.	Nov.	Dec.
1.....	2.25	3.10	3.75	.....	1.25	17.....	2.90	3.60	5.70	1.00	1.30
2.....	2.20	3.80	3.60	.....	1.10	18.....	3.30	3.50	5.80	1.00	1.30
3.....	2.30	3.10	4.40	.....	1.35	19.....	2.90	3.50	6.90	1.00	1.60
4.....	2.50	3.00	3.65	.....	1.60	20.....	3.30	3.70	5.70	1.00	1.70
5.....	2.80	3.30	3.60	.....	2.30	21.....	3.30	4.30	5.60	1.00	3.40
6.....	2.40	5.52	7.50	.....	1.60	22.....	3.30	4.55	5.40	1.00	2.60
7.....	2.40	4.70	5.60	1.05	1.30	23.....	3.25	4.90	5.10	1.00	2.05
8.....	2.40	4.10	4.90	1.00	1.25	24.....	3.00	8.85	5.00	1.00	1.70
9.....	2.40	4.00	5.00	1.15	1.20	25.....	2.90	5.30	4.80	1.00	1.60
10.....	2.30	3.80	7.10	1.10	1.15	26.....	2.85	4.70	.....	1.00	1.70
11.....	2.30	4.00	5.30	1.00	1.15	27.....	2.80	4.30	.....	1.40	1.65
12.....	2.40	5.40	9.15	1.00	1.15	28.....	2.20	3.90	.....	1.30	1.50
13.....	2.30	5.00	6.80	1.00	1.30	29.....	2.20	.....	.....	1.30	1.45
14.....	3.00	4.15	7.70	1.00	2.00	30.....	2.60	.....	.....	1.30	1.40
15.....	2.80	3.90	6.20	1.00	1.70	31.....	2.90	.....	.....	.....	1.50
16.....	2.60	3.80	6.90	1.00	1.40						

DAILY GAGE HEIGHT, IN FEET, OF TUCKASEEGEE RIVER AT BRYSON, N. C., FOR 1898.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	1.50	1.80	1.50	3.10	2.00	1.50	1.40	2.30	2.00	1.85	2.00	2.20
2.....	1.20	1.75	1.40	2.80	1.90	1.40	1.35	2.40	3.10	1.70	1.95	2.15
3.....	1.30	1.75	1.40	2.60	1.85	1.35	1.30	2.50	8.50	1.70	1.90	2.00
4.....	1.40	1.85	1.40	2.50	1.80	1.35	1.40	7.80	4.50	7.60	1.80	2.70
5.....	1.40	1.70	1.35	2.80	2.00	1.30	1.50	4.10	6.00	5.70	1.80	2.50
6.....	1.35	1.60	1.35	2.50	1.90	1.30	1.55	3.50	3.80	4.30	1.95	2.25
7.....	1.50	1.65	1.35	2.50	1.85	1.30	1.60	2.80	3.60	3.60	1.90	2.20
8.....	1.40	1.60	1.35	2.40	1.85	1.30	1.60	2.60	3.50	3.20	1.90	2.00
9.....	1.50	1.60	1.30	2.25	1.80	1.30	1.50	2.50	3.25	2.90	2.15	2.00
10.....	1.60	1.60	1.30	2.65	1.80	1.30	1.40	2.30	2.70	2.80	2.50	1.90
11.....	1.60	1.55	1.30	2.40	1.80	1.25	1.30	5.30	2.50	2.80	2.00	1.80
12.....	2.25	1.65	1.35	2.25	1.80	1.40	1.30	3.50	2.30	2.90	2.00	1.80
13.....	2.25	1.55	1.60	2.20	1.75	1.40	1.30	3.20	2.10	2.40	2.00	1.75
14.....	2.00	1.55	1.60	2.40	1.60	1.40	3.50	3.00	2.10	2.30	2.00	1.60
15.....	1.90	1.45	1.70	2.30	1.60	1.30	2.00	2.90	2.00	2.25	1.90	1.70
16.....	2.10	1.40	1.65	2.25	2.00	1.50	2.00	2.50	2.00	2.25	2.00	1.70
17.....	1.90	1.40	1.70	2.15	1.60	1.90	1.70	2.40	2.00	5.30	2.10	1.90
18.....	1.75	1.50	2.10	2.10	1.60	1.70	1.70	2.50	1.90	3.40	2.50	1.80
19.....	2.30	1.60	1.90	2.20	2.00	1.70	1.50	2.30	1.90	2.80	2.30	1.80
20.....	3.50	1.60	1.70	2.10	1.90	1.60	1.40	2.30	1.85	2.80	2.40	2.25
21.....	2.50	1.55	1.60	2.00	1.60	1.40	1.50	2.20	1.70	2.70	2.20	2.20
22.....	2.20	1.50	1.50	1.95	1.60	1.30	1.55	2.10	4.30	2.55	2.30	2.00
23.....	2.60	1.40	1.50	2.10	1.80	1.30	1.60	2.00	3.30	2.45	2.40	1.90
24.....	2.50	1.45	1.70	2.05	1.80	1.35	1.60	2.10	2.80	2.45	2.25	2.35
25.....	4.50	1.40	1.50	2.50	1.55	1.40	1.90	2.00	2.30	2.30	2.40	2.85
26.....	3.40	1.40	1.50	2.40	1.55	1.30	1.90	1.90	2.00	2.30	2.20	2.50
27.....	2.70	1.40	1.60	2.40	1.50	1.30	2.10	1.90	1.90	2.15	2.00	2.25
28.....	2.50	1.35	1.70	2.20	1.50	1.40	2.40	1.80	1.90	2.10	2.00	2.90
29.....	2.20	.....	6.70	2.10	1.50	1.35	2.00	1.75	1.85	2.65	2.40	2.80
30.....	2.10	.....	5.50	2.00	1.50	1.30	2.00	2.00	1.85	2.10	2.25	2.80
31.....	2.00	.....	3.80	.....	1.50	.....	2.20	2.20	.....	2.00	.....	2.60

DAILY GAGE HEIGHT, IN FEET, OF TUCKASEEGEE RIVER AT BRYSON, N. C., FOR 1899-1900.

1899.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	2.50	2.05	3.20	3.40	2.30	1.80	1.50	1.40	1.40	1.00	1.00	1.50
2.....	2.50	1.85	3.00	3.05	2.30	1.80	1.50	1.40	1.40	1.00	1.00	1.40
3.....	2.05	3.00	2.25	3.50	2.50	2.00	1.50	1.40	1.35	1.00	1.80	1.40
4.....	2.20	9.00	3.30	3.20	2.60	1.70	1.50	1.40	1.30	1.00	1.70	1.20
5.....	2.60		3.50	3.10	2.60	1.70	1.50	1.40	1.30	1.00	1.20	1.20
6.....	3.00	7.50	3.40	3.10	3.00	1.70	1.80	1.30	1.30	1.00	1.15	1.20
7.....	2.60	7.00	3.25	3.10	3.00	1.70	1.80	1.30	1.20	1.00	1.05	1.20
8.....	2.55	5.30	3.00	3.00	2.90	1.70	1.70	1.30	1.20	2.00	1.05	1.20
9.....	2.50	3.50	2.95	3.60	2.85	1.70	1.60	1.30	1.20	1.50	1.00	1.50
10.....	2.80	3.00	2.80	3.20	2.60	1.80	1.60	1.40	1.20	1.40	1.00	1.30
11.....	2.30	3.20	2.80	3.00	2.60	1.80	1.50	1.40	1.20	1.40	1.00	1.50
12.....	(*)	3.00	2.65	3.00	2.35	3.50	1.40	1.40	1.20	1.30	1.00	6.50
13.....		2.80	2.60	2.90	2.30	2.80	1.30	1.40	1.20	1.25	1.00	2.90
14.....	2.60	2.80	3.40	2.90	2.30	2.20	1.30	1.40	1.20	1.10	1.00	2.00
15.....	2.30	2.70	9.60	2.85	2.20	2.10	1.30	1.30	1.20	1.00	1.00	1.65
16.....	2.20	2.70	6.50	2.80	2.25	2.00	1.30	1.30	1.20	1.00	1.00	1.50
17.....	2.20	2.70	4.80	2.60	2.20	2.00	1.50	1.30	1.15	1.00	1.00	1.30
18.....	2.20	2.60	4.90	2.60	2.25	2.00	1.30	1.30	1.15	1.00	1.00	1.30
19.....	2.10	2.50	11.00	2.55	2.25	1.80	1.30	1.30	1.10	1.00	1.00	1.90
20.....	2.10	2.50	5.80	2.50	2.20	1.70	1.30	1.20	1.25	2.00	1.05	1.50
21.....	2.05	2.50	4.60	2.50	2.10	1.70	1.40	1.20	1.05	1.15	1.50	1.50
22.....	2.00	2.45	4.80	2.45	2.00	1.60	1.40	1.20	1.00	1.10	1.50	1.50
23.....	2.00	2.40	4.30	2.40	2.00	1.60	1.50	1.20	1.00	1.10	1.30	1.50
24.....	2.20	2.35	3.70	3.00	2.00	1.60	1.50	1.20	1.00	1.10	1.20	1.90
25.....	2.05	2.30	3.60	2.90	2.00	1.50	1.50	1.20	1.00	1.10	1.20	1.90
26.....	2.00	3.40	3.60	2.80	1.90	1.80	1.50	1.20	1.00	1.10	1.20	1.90
27.....	2.00	7.00	4.00	2.80	1.90	1.70	1.50	1.20	1.00	1.05	1.20	1.80
28.....	1.95	3.50	3.60	2.60	1.90	1.60	2.00	1.30	1.00	1.05	1.50	1.70
29.....	1.90		3.50	2.50	1.80	1.60	2.00	1.35	1.00	1.05	1.45	1.70
30.....	1.80		3.40	2.40	1.80	1.60	1.60	1.50	1.00	1.00	1.30	1.50
31.....	2.00		4.00		1.80		1.50	1.50		1.00		1.50
1900.												
1.....	1.50	2.75	2.60	2.15	2.30	1.50	2.50	1.60	1.40	1.20	1.35	1.50
2.....	1.50	2.75	2.55	2.15	2.20	1.60	2.40	1.60	1.50	1.20	1.35	1.40
3.....	1.50	1.60	2.30	2.40	2.30	1.60	2.40	1.50	1.40	1.20	2.10	3.30
4.....	1.50	1.60	2.60	2.30	2.10	1.70	2.20	1.50	1.30	1.25	1.70	2.50
5.....	1.50	1.80	2.80	2.25	2.10	2.10	2.20	1.50	1.30	1.25	1.50	2.20
6.....	1.50	1.65	3.30	2.25	2.10	2.00	2.10	1.50	1.30	1.20	1.50	2.00
7.....	1.50	1.60	3.50	2.20	2.00	1.90	2.00	1.40	1.20	1.20	1.40	1.80
8.....	1.60	2.00	3.90	2.15	2.00	1.90	2.00	1.40	1.20	1.20	1.40	1.70
9.....	1.60	3.10	3.90	2.15	2.30	2.10	2.10	1.40	1.20	1.20	1.30	1.60
10.....	2.80	2.50	3.85	2.20	2.00	2.00	1.80	1.40	1.20	1.15	1.30	1.60
11.....	3.10	2.00	3.75	2.40	1.90	1.90	2.00	1.40	1.20	1.15	1.30	1.60
12.....	2.70	4.00	3.60	2.40	1.80	1.90	1.90	1.40	1.15	1.20	1.30	1.55
13.....	2.90	8.00	3.50	2.70	1.80	1.90	2.00	1.50	1.15	1.35	1.30	1.50
14.....	2.80	4.80	2.40	2.30	1.80	1.90	2.00	1.50	1.80	1.20	1.30	1.50
15.....	2.70	4.20	2.40	2.10	1.70	1.80	2.00	1.40	2.90	1.20	1.30	1.45
16.....	2.50	4.15	2.35	2.20	1.70	3.00	1.90	1.40	2.10	1.20	1.30	1.40
17.....	2.50	4.00	3.00	2.20	1.70	3.60	1.90	1.40	1.70	1.15	1.25	1.40
18.....	2.40	3.85	3.50	3.50	1.70	3.40	1.90	1.25	1.50	1.10	1.20	1.40
19.....	2.30	3.70	2.65	3.00	1.70	3.00	1.80	1.30	1.40	1.10	1.20	1.40
20.....	2.30	3.50	3.00	2.80	1.70	2.40	1.80	1.30	1.40	1.10	1.15	1.80
21.....	2.30	3.40	2.85	3.90	1.60	2.20	2.00	1.30	1.40	1.10	1.35	2.30
22.....	2.80	3.20	2.60	2.80	1.60	3.40	2.10	1.90	1.35	1.20	1.30	1.70
23.....	2.80	3.00	6.45	3.30	1.60	3.50	2.00	1.50	1.50	5.20	1.25	2.30
24.....	2.80	3.00	2.50	2.50	1.85	4.30	1.80	1.50	1.35	2.20	1.20	2.00
25.....	2.60	3.00	3.00	2.60	1.90	3.00	1.60	1.30	1.30	1.80	3.10	1.80
26.....	2.50	2.80	2.60	2.70	1.80	2.90	1.60	1.50	1.30	1.60	4.80	1.70
27.....	2.50	2.80	2.55	2.60	1.60	2.70	2.50	1.50	1.25	1.40	2.10	1.60
28.....	2.40	2.80	2.40	2.50	1.60	2.50	2.40	1.40	1.25	1.40	1.80	1.70
29.....	2.40		2.35	2.30	1.60	3.50	2.20	1.40	1.20	1.40	1.70	1.60
30.....	2.40		2.35	2.50	1.50	3.00	2.00	1.40	1.20	1.40	1.60	1.80
31.....	2.40		2.20		1.40		1.60	1.50		1.35		2.50

\*River frozen.

DAILY GAGE HEIGHT, IN FEET, OF TUCKASEEGEE RIVER AT BRYSON, N. C., FOR 1901-1902.

1901.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	2.00	1.70	1.60	2.70	2.40	2.50	1.90	1.40	2.80	1.70	1.40	1.20
2.....	1.90	1.70	1.60	5.60	2.40	2.40	2.00	1.35	2.60	1.70	1.40	1.20
3.....	1.80	2.20	1.50	4.40	2.30	2.40	2.40	1.30	2.45	1.70	1.35	1.80
4.....	1.70	3.00	1.50	3.80	1.30	2.30	1.80	1.30	2.40	1.65	1.35	1.50
5.....	1.65	2.30	2.30	3.50	2.20	2.30	1.80	1.50	2.50	1.60	1.35	1.40
6.....	1.60	2.00	1.60	3.30	2.20	2.20	2.60	7.00	2.20	1.60	1.30	1.40
7.....	1.60	2.00	1.50	3.00	2.20	2.60	2.00	3.50	2.10	1.60	1.30	1.30
8.....	1.55	1.90	1.60	2.80	2.20	2.30	2.20	2.00	2.00	1.55	1.30	1.30
9.....	1.55	2.60	2.60	2.70	2.10	2.20	1.80	1.80	1.90	1.55	1.30	1.50
10.....	2.60	2.10	3.60	2.60	2.00	2.10	1.70	1.80	2.00	1.55	1.30	2.40
11.....	7.10	2.10	2.50	2.50	2.00	2.00	1.60	1.80	1.80	1.50	1.40	1.70
12.....	4.30	2.00	2.10	2.30	1.90	2.20	1.55	2.30	2.80	1.50	1.30	1.40
13.....	3.20	2.00	2.00	3.00	1.90	2.30	1.50	4.10	2.10	2.50	1.30	1.50
14.....	2.80	1.90	1.90	2.80	1.90	3.00	1.50	3.60	2.00	1.80	1.30	8.80
15.....	2.60	1.90	1.80	2.60	1.80	2.50	1.50	5.00	1.90	1.60	1.25	4.50
16.....	2.30	1.85	1.80	2.50	1.80	2.50	1.55	4.50	1.80	1.60	1.25	3.80
17.....	2.20	1.80	1.70	2.40	1.80	2.80	1.50	5.15	3.80	1.50	1.25	2.60
18.....	2.00	1.80	1.70	2.40	1.80	2.30	2.00	4.50	2.00	1.50	1.25	2.30
19.....	1.95	1.80	1.70	2.60	2.90	2.20	1.70	4.60	2.20	1.45	1.20	2.10
20.....	1.90	1.70	1.90	4.30	2.30	2.20	1.70	3.40	2.10	1.45	1.20	2.10
21.....	1.90	1.60	2.80	3.70	8.25	2.60	1.65	3.50	2.00	1.45	1.20	1.90
22.....	1.80	1.60	1.90	3.20	5.40	2.20	1.50	5.00	1.90	1.40	1.20	2.00
23.....	1.80	1.50	1.90	3.00	3.50	2.00	1.50	3.80	1.85	1.40	1.50	2.00
24.....	2.00	1.50	2.10	2.80	3.00	2.10	1.45	3.40	1.80	1.40	1.40	2.00
25.....	1.80	1.50	5.00	2.80	3.35	3.00	1.40	3.00	1.75	1.40	1.30	2.00
26.....	1.70	1.50	6.75	2.70	3.30	2.10	1.40	2.80	1.75	1.40	1.30	2.10
27.....	2.00	1.50	4.00	2.70	3.00	2.00	1.50	3.40	1.80	1.40	1.25	3.50
28.....	1.70	1.50	3.30	2.70	2.90	2.00	1.40	3.60	1.80	1.40	1.25	3.20
29.....	1.60		3.00	2.60	2.80	2.00	1.40	3.40	1.80	1.40	1.20	9.90
30.....	2.00		3.10	2.50	2.90	2.00	1.40	3.00	1.80	1.40	1.20	4.80
31.....	1.80		2.80		2.80		1.50	3.00		1.40		3.80
1902.												
1.....	3.30	3.95	4.90	3.10	2.20	1.90	1.50	1.10	0.95	1.50	1.10	1.80
2.....	3.00	4.10	4.00	2.90	2.10	1.60	1.40	1.05	.95	1.30	1.10	1.60
3.....	2.80	3.20	3.50	2.80	1.90	1.55	1.35	1.20	1.35	1.25	1.10	2.80
4.....	2.60	2.90	3.20	2.70	1.90	1.50	1.30	1.10	1.20	1.30	1.10	2.20
5.....	2.40	2.50	3.10	2.60	1.90	1.50	1.40	1.10	1.10	1.35	1.20	2.20
6.....	2.40	2.50	3.10	2.50	1.90	1.45	1.50	1.40	1.10	1.30	2.50	1.90
7.....	2.30	2.40	2.90	2.90	1.90	1.50	1.40	1.15	1.00	1.25	1.50	1.80
8.....	2.25	2.30	3.30	2.70	1.85	1.50	1.30	1.10	1.00	1.20	1.40	1.70
9.....	2.20	2.10	3.00	2.50	1.80	1.50	1.60	1.05	2.70	1.20	1.30	1.60
10.....	2.10	2.00	2.90	2.40	1.75	1.40	1.50	1.05	1.70	1.10	1.25	1.60
11.....	2.05	1.90	2.80	2.40	1.75	1.40	1.40	1.00	1.20	1.30	1.20	1.50
12.....	2.00	2.00	2.80	2.35	1.75	1.35	1.75	1.00	1.10	1.30	1.20	1.50
13.....	1.90	1.90	3.20	2.30	1.75	1.40	1.40	1.00	1.50	1.30	1.20	1.50
14.....	2.00	1.40	2.80	2.25	1.80	1.40	1.30	1.00	1.20	1.75	1.15	1.50
15.....	1.90	2.00	2.70	2.20	1.75	1.40	1.40	1.00	1.10	1.30	1.15	4.00
16.....	1.90	2.00	5.25	2.20	1.70	1.60	1.30	1.20	1.10	1.30	1.10	2.10
17.....	1.80	1.90	3.65	2.35	1.75	1.50	1.25	1.00	1.00	1.25	1.20	2.00
18.....	1.80	1.80	3.00	2.20	1.70	1.40	1.20	1.00	1.00	1.20	1.50	1.90
19.....	1.80	1.80	2.90	2.20	2.00	1.40	1.30	1.10	4.00	1.20	1.30	1.80
20.....	1.80	2.00	2.75	2.20	1.80	1.40	1.30	1.00	2.00	1.20	1.20	1.70
21.....	1.90	2.20	2.70	2.15	1.80	1.80	1.25	1.00	1.80	1.15	1.20	3.70
22.....	1.80	2.15	2.60	2.10	1.80	1.45	1.20	1.00	1.20	1.10	1.20	2.30
23.....	1.75	2.00	2.50	2.00	1.90	1.40	1.20	1.00	1.20	1.10	1.15	2.10
24.....	1.70	2.00	2.40	2.00	1.75	1.35	1.20	.95	1.40	1.10	1.15	1.90
25.....	1.65	2.30	2.40	2.00	2.00	1.30	1.10	.90	2.10	1.10	3.45	1.86
26.....	1.80	2.10	2.30	2.00	1.75	1.60	1.10	1.10	1.70	1.10	2.10	1.70
27.....	2.40	3.00	2.30	1.95	1.70	1.90	1.10	1.15	1.50	1.10	1.80	1.60
28.....	2.30	9.90	4.50	1.90	1.65	1.50	1.20	1.10	1.40	1.10	1.60	1.80
29.....	2.40		6.25	2.10	1.60	1.50	1.20	1.10	1.30	1.10	1.40	1.80
30.....	3.20		3.90	2.10	1.60	1.70	1.20	1.10	1.40	1.10	1.60	1.80
31.....	3.80		3.40		1.60		1.10	1.10		1.10		1.60

DAILY GAGE HEIGHT, IN FEET, OF TUCKAHEEGEE RIVER AT BRYSON, N. C., FOR 1903 AND 1904.

1903.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	1.80	1.60	4.00	3.30	2.25	2.50	1.50	1.30	1.10	0.95	1.00	0.90
2.....	1.90	1.75	3.40	3.10	2.20	2.65	1.50	1.70	1.10	.95	1.00	.90
3.....	2.50	2.00	3.10	2.90	2.20	2.20	1.50	1.50	1.10	.95	1.00	.90
4.....	2.10	5.75	2.80	3.30	2.20	2.10	1.50	1.40	1.20	.95	1.10	.90
5.....	1.90	3.15	3.00	2.90	2.10	3.05	1.65	1.50	1.10	.90	1.35	1.00
6.....	1.85	2.65	3.00	2.80	2.05	3.30	1.60	1.35	1.10	.90	1.10	1.00
7.....	1.70	2.95	2.90	3.30	2.00	2.70	1.55	1.25	1.05	1.00	1.00	.90
8.....	1.70	3.85	4.35	6.50	2.00	2.30	1.50	1.20	1.10	1.00	1.00	1.00
9.....	1.60	3.00	3.50	3.60	2.00	2.20	1.50	1.20	1.10	1.05	1.00	1.00
10.....	1.70	2.70	3.60	3.40	1.95	2.30	1.80	1.20	1.10	1.00	1.00	.95
11.....	2.30	4.20	4.20	3.30	1.90	2.20	1.70	1.50	1.05	1.00	1.00	.90
12.....	1.90	3.50	3.70	3.10	1.90	2.10	1.70	1.30	1.00	.95	1.05	1.00
13.....	1.75	3.00	3.30	4.75	1.90	1.95	1.95	1.25	1.00	.95	1.10	1.30
14.....	1.80	2.80	3.10	4.00	1.90	1.90	1.60	1.30	1.00	.95	1.10	1.10
15.....	1.70	2.70	3.00	3.60	1.85	1.80	1.50	1.40	1.50	.95	1.10	1.10
16.....	1.60	5.00	2.80	3.40	1.80	1.75	1.50	1.50	1.40	.95	1.00	.95
17.....	1.60	4.90	2.70	3.20	1.80	1.70	1.70	1.25	1.20	1.30	4.00	.90
18.....	1.60	3.50	2.60	3.10	1.75	1.75	1.45	1.40	1.10	1.10	1.75	.90
19.....	1.55	3.10	2.50	3.00	1.75	1.65	1.50	1.40	1.05	1.05	1.20	1.00
20.....	1.55	3.00	2.40	3.30	1.70	1.85	1.40	1.30	1.05	1.00	1.10	1.80
21.....	1.60	2.80	2.80	3.10	1.75	1.70	1.40	1.20	1.05	1.00	1.10	1.30
22.....	1.55	2.50	4.45	2.90	1.75	1.65	1.35	1.20	1.00	1.00	1.10	1.15
23.....	1.50	2.30	8.20	2.75	1.70	1.65	1.85	1.20	1.00	.95	1.10	1.10
24.....	1.60	2.25	5.15	2.60	1.70	1.55	1.30	1.15	1.00	.95	1.05	1.10
25.....	1.55	2.20	4.00	2.70	1.65	1.55	1.30	1.15	1.00	.95	1.00	1.40
26.....	1.50	2.10	3.60	2.60	1.60	1.75	1.25	1.10	1.00	.95	1.00	1.40
27.....	1.55	2.50	3.30	2.50	1.60	1.65	1.25	1.10	1.00	.95	.90	1.10
28.....	1.80	7.80	3.10	2.40	1.65	1.60	1.60	1.10	.95	.95	.90	1.30
29.....	1.80		3.20	2.35	1.95	1.55	1.40	1.10	.95	.95	.95	1.10
30.....	1.80		4.30	2.30	2.20	1.50	1.40	1.25	.95	.95	1.00	1.10
31.....	1.70		3.60		2.10		1.35	1.10		1.00		1.00
1904.												
1.....	1.10	1.20	1.85	1.90	1.60	1.70	1.45	1.40	1.30	1.00	0.85	1.10
2.....	1.20	1.10	1.70	1.80	1.60	1.70	1.35	1.40	1.50	1.00	.85	1.05
3.....	1.10	1.25	1.70	1.75	1.60	1.60	1.25	1.30	1.30	.95	1.00	1.30
4.....	1.00	1.10	1.65	1.70	1.55	1.50	1.40	1.30	1.40	.95	1.10	1.10
5.....	.90	1.15	1.50	1.70	1.50	1.40	1.30	1.40	1.50	.95	1.15	2.80
6.....	1.10	1.20	1.50	1.80	1.50	1.40	1.25	1.40	1.30	.95	1.05	1.70
7.....	1.10	1.90	4.80	2.60	1.50	2.00	1.20	1.80	1.20	.95	.90	1.40
8.....	1.05	2.00	2.65	2.40	3.90	1.70	1.20	1.40	1.20	.95	.90	1.30
9.....	1.00	1.60	2.30	2.10	2.60	1.60	1.60	1.40	1.20	.90	.90	1.15
10.....	1.10	1.50	2.05	1.95	2.10	1.45	1.35	2.00	1.20	.90	.90	1.25
11.....	1.25	1.50	2.10	1.85	1.90	1.50	1.35	2.00	1.25	.90	.90	1.20
12.....	1.10	1.40	1.90	1.80	1.80	1.40	1.30	1.70	1.15	.90	.90	1.15
13.....	1.25	1.30	1.80	1.75	1.80	1.35	1.20	1.50	1.15	.90	1.25	1.10
14.....	1.10	1.40	1.40	1.70	1.80	1.30	1.25	1.40	1.10	.90	1.10	1.05
15.....	1.10	1.40	2.00	1.70	1.70	1.30	1.15	1.40	1.10	.90	1.00	1.10
16.....	1.50	1.30	1.85	1.70	1.60	1.30	1.30	1.50	1.05	.90	.95	1.05
17.....	1.60	1.25	1.80	1.70	1.60	1.30	1.25	1.30	1.05	.90	.95	1.10
18.....	1.30	1.30	1.85	1.60	1.55	1.30	1.20	1.30	1.00	.90	.90	1.10
19.....	1.20	1.70	1.70	1.60	1.55	1.30	1.10	1.25	1.00	.90	.90	1.00
20.....	1.20	1.60	1.70	1.70	1.50	1.55	1.20	1.30	1.00	.85	.90	.95
21.....	1.20	2.00	2.10	1.70	1.50	1.30	1.30	1.20	1.00	.90	.90	1.00
22.....	5.40	2.80	2.10	1.60	1.45	1.50	1.40	1.20	1.00	.85	1.10	.95
23.....	1.90	2.00	3.70	1.55	1.40	1.30	1.40	1.30	1.00	.85	1.15	1.00
24.....	1.60	1.80	3.10	1.50	1.40	1.25	1.40	1.70	1.00	.85	1.00	1.20
25.....	1.60	1.70	2.70	1.50	1.40	1.25	1.40	1.50	1.00	.90	1.00	1.40
26.....	1.50	1.60	2.70	2.30	1.35	1.40	1.30	1.50	.95	.90	.90	1.30
27.....	1.35	2.00	2.60	1.80	1.35	1.30	1.20	1.60	.95	.90	.90	2.20
28.....	1.40	1.70	2.30	1.70	1.30	1.40	1.30	1.40	1.00	.85	.90	2.20
29.....	1.40	1.70	2.15	1.70	1.40	1.95	1.20	1.30	1.00	.85	.90	1.45
30.....	1.20		2.10	1.70	1.60	1.50	1.20	1.25	1.00	.85	1.50	1.40
31.....	1.20		2.00		2.00		1.20	1.25		.85		1.30



DAILY GAGE HEIGHT, IN FEET, OF TUCKAHEE RIVER AT BRYSON, N. C., FOR 1905 AND 1906.

1905.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	1.30	1.30	2.00	1.65	1.80	1.70	1.70	1.50	1.40	1.10	1.10	1.10
2.....	1.30	1.35	2.00	1.60	1.70	1.70	1.70	1.45	1.70	1.10	1.10	1.30
3.....	1.50	1.30	1.90	1.60	1.75	1.65	1.50	1.45	1.65	1.40	1.19	5.20
4.....	1.20	1.20	1.85	1.60	1.80	1.60	1.50	1.45	1.45	1.30	1.10	2.10
5.....	1.30	1.40	1.90	1.90	1.80	1.60	1.45	1.50	1.40	1.15	1.10	1.70
6.....	1.50	2.00	1.90	1.80	2.10	1.60	1.80	1.45	1.35	1.10	1.30	1.55
7.....	1.55	1.70	2.00	1.70	2.30	1.60	1.60	1.50	1.35	1.10	1.15	1.50
8.....	1.30	2.40	2.10	1.65	2.10	1.50	1.60	2.30	1.30	1.10	1.10	2.00
9.....	1.40	3.70	3.80	2.00	2.00	1.45	1.50	1.80	1.30	1.10	1.10	3.90
10.....	1.35	2.80	3.60	1.80	1.85	1.40	1.70	2.70	1.30	1.30	1.10	2.50
11.....	1.40	2.40	2.50	1.75	1.80	1.40	3.10	3.30	1.30	2.65	1.10	2.00
12.....	6.40	2.30	2.40	2.35	1.70	1.55	5.30	2.80	1.50	1.40	1.10	1.90
13.....	3.45	3.30	2.30	2.10	1.75	1.45	3.30	2.40	1.30	1.35	1.05	1.70
14.....	2.50	2.50	2.10	1.90	1.75	1.40	2.80	2.30	1.30	1.20	1.05	1.70
15.....	2.05	2.30	2.00	1.85	2.00	1.45	2.60	2.10	1.25	1.20	1.05	1.90
16.....	1.85	2.10	1.90	1.80	3.10	1.70	2.20	2.00	1.25	1.20	1.05	1.75
17.....	1.80	2.00	1.90	1.70	2.30	1.55	2.10	2.10	1.20	1.15	1.05	1.70
18.....	1.70	1.80	1.85	1.70	2.10	1.60	2.00	1.95	1.20	1.15	1.05	1.60
19.....	1.60	1.80	1.80	1.65	2.00	1.90	2.05	1.80	1.25	1.15	1.10	1.60
20.....	1.55	4.00	2.00	1.70	1.90	1.80	2.00	1.80	1.20	1.30	1.30	1.75
21.....	1.50	3.80	2.80	1.60	2.00	1.80	1.90	1.75	1.20	1.15	1.15	1.55
22.....	1.45	3.20	2.15	1.60	2.00	1.80	2.25	1.65	1.20	1.15	1.10	1.95
23.....	1.40	2.90	2.05	1.60	2.50	1.80	1.90	1.80	1.15	1.10	1.10	3.00
24.....	1.40	2.60	2.00	1.55	2.20	1.65	1.80	2.00	1.10	1.10	1.05	2.30
25.....	1.20	2.50	1.90	1.50	2.05	1.60	1.70	1.75	1.10	1.55	1.10	2.00
26.....	1.20	2.30	1.85	1.70	2.10	1.50	1.65	1.70	1.10	1.30	1.10	1.90
27.....	1.50	2.20	1.80	1.70	2.00	2.20	1.60	1.60	1.10	1.30	1.05	1.80
28.....	1.50	2.10	1.75	1.60	1.95	1.75	1.80	1.55	1.10	1.20	1.05	1.90
29.....	1.50		1.70	2.10	1.85	1.60	1.70	1.50	1.10	1.30	1.30	1.90
30.....	1.40		1.80	1.95	1.90	1.60	1.60	1.50	1.10	1.10	1.30	1.70
31.....	1.35		1.70		1.85		1.50	1.45		1.10		1.70
1906.												
1.....	1.60	2.20	1.60	2.70	2.00	1.55	1.65	2.20	2.50	3.80	1.75	1.95
2.....	1.60	2.15	1.60	2.45	1.90	2.50	1.60	2.40	2.25	4.80	1.75	1.90
3.....	5.50	2.00	3.60	2.30	2.10	1.50	2.00	2.30	2.40	4.60	1.70	2.00
4.....	3.60	1.95	2.30	2.20	2.00	1.70	2.10	2.20	2.40	3.90	1.70	1.90
5.....	2.90	2.00	2.00	2.15	1.90	1.90	1.80	2.00	3.20	3.50	1.70	1.85
6.....	2.50	1.95	1.90	2.30	2.00	1.90	2.10	2.10	2.60	4.20	1.70	2.30
7.....	2.30	1.90	1.85	2.10	2.00	1.70	1.90	2.00	2.40	3.40	1.65	1.90
8.....	2.20	1.85	2.00	2.05	1.90	1.60	2.00	1.90	2.30	3.10	1.65	1.80
9.....	2.05	1.80	1.90	2.50	1.80	1.60	1.90	1.70	2.10	2.90	1.60	1.80
10.....	1.90	1.80	1.80	2.40	1.70	1.70	1.65	1.70	2.00	2.70	1.60	2.20
11.....	1.90	1.75	1.75	2.25	1.70	1.70	1.65	1.70	1.90	2.50	1.90	2.30
12.....	2.10	1.85	1.70	2.15	1.70	1.65	1.60	1.65	2.00	2.40	1.70	2.00
13.....	2.00	1.80	1.70	2.10	1.70	3.70	1.60	1.60	2.00	2.45	1.70	1.90
14.....	2.10	1.80	1.90	3.75	1.65	2.20	2.40	1.90	1.80	2.30	1.70	1.90
15.....	2.00	1.75	3.45	3.30	1.60	3.60	2.60	2.20	1.80	2.20	1.60	1.90
16.....	2.10	1.70	2.50	2.80	1.60	2.50	2.20	2.00	1.75	2.20	1.60	1.90
17.....	1.90	1.65	2.10	2.60	1.60	2.20	2.70	2.00	1.70	2.15	1.75	3.00
18.....	2.30	1.65	2.20	2.40	1.55	2.00	3.35	2.40	4.20	3.00	5.00	2.60
19.....	2.00	1.65	2.50	2.30	1.55	2.00	2.70	2.10	4.60	2.40	10.00	2.30
20.....	2.00	1.60	2.70	2.20	1.50	1.90	2.40	2.00	3.10	2.35	4.20	2.30
21.....	2.00	2.00	2.40	2.20	1.50	1.80	2.50	2.10	2.70	2.20	3.40	2.30
22.....	4.30	1.80	2.30	2.10	1.55	1.80	2.70	2.00	2.60	2.10	2.90	2.20
23.....	5.00	1.70	2.15	2.00	1.50	1.75	2.50	2.00	2.80	2.00	2.80	2.20
24.....	3.40	1.70	2.20	2.00	1.45	2.60	2.50	2.30	2.50	2.00	2.50	2.00
25.....	3.00	1.65	2.10	1.95	1.40	2.20	2.20	2.00	2.40	1.90	2.40	2.05
26.....	3.10	1.60	2.00	1.90	1.50	1.90	2.10	2.00	2.25	1.90	2.25	2.00
27.....	2.75	1.85	2.40	1.90	2.00	1.90	2.00	2.10	2.30	1.85	2.30	2.00
28.....	2.60	1.60	2.20	1.90	2.40	1.80	2.00	2.30	2.40	1.80	2.10	2.90
29.....	2.50		2.50	1.90	1.90	1.80	2.10	2.70	4.40	1.80	2.00	2.60
30.....	2.40		4.20	1.85	1.70	1.70	2.10	3.60	6.20	1.80	2.00	2.55
31.....	2.30		3.00		1.60		2.00	2.80		1.80		4.00

DAILY GAGE HEIGHT, IN FEET, OF TUCKASEGEE RIVER AT BRYSON, N. C., FOR 1907.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	2.80	2.00	2.90	1.70	1.80	2.90	1.70	1.35	1.20	1.60	1.20	1.65
2.....	2.60	2.20	3.20	1.60	1.75	2.30	1.85	1.30	1.15	1.50	2.30	1.60
3.....	2.40	2.10	2.40	1.60	2.40	2.10	1.90	1.30	1.25	1.50	1.70	1.50
4.....	2.30	2.25	2.10	1.60	2.50	1.90	1.70	1.30	1.30	1.45	1.40	1.50
5.....	2.25	2.90	2.00	2.10	2.10	1.80	1.60	1.30	1.30	1.85	1.35	1.40
6.....	2.20	2.40	2.00	2.00	2.30	1.75	1.60	1.35	1.20	1.50	1.35	1.50
7.....	2.10	2.20	2.50	1.90	2.80	1.70	1.50	1.30	1.20	1.40	1.30	1.50
8.....	2.10	2.10	2.30	1.80	2.40	3.00	1.50	1.45	1.60	1.50	1.30	1.45
9.....	2.00	2.00	2.10	1.80	2.30	2.10	1.45	1.30	1.35	1.40	1.25	2.65
10.....	2.00	2.00	3.00	1.70	2.20	2.00	1.40	1.80	1.25	1.35	2.30	2.80
11.....	1.95	1.90	2.40	1.65	2.60	1.90	1.45	1.40	1.65	1.30	1.85	2.10
12.....	1.95	1.85	2.20	1.70	2.30	1.80	2.45	1.45	1.40	1.30	1.60	1.80
13.....	1.90	1.85	2.10	1.60	2.10	1.80	1.90	1.45	1.25	1.30	1.50	1.75
14.....	1.90	1.80	2.20	1.60	2.10	1.90	1.60	1.35	1.20	1.30	1.50	2.65
15.....	1.85	1.70	2.20	1.60	2.20	1.80	1.80	1.50	1.20	1.25	1.40	2.25
16.....	1.80	1.70	2.00	1.80	2.00	1.70	1.70	1.65	1.20	1.25	1.40	2.05
17.....	1.90	1.70	2.00	1.75	1.90	1.65	2.45	1.50	1.20	1.25	1.40	1.90
18.....	1.80	1.70	1.95	1.70	1.90	1.60	1.90	1.55	1.20	1.20	1.70	1.90
19.....	1.80	1.70	1.90	2.45	1.80	1.70	1.65	1.40	1.20	1.20	1.75	1.80
20.....	2.10	1.70	1.85	1.90	1.80	1.60	1.60	1.30	1.10	1.20	1.60	1.70
21.....	1.80	1.70	1.80	1.80	1.75	1.55	1.55	1.50	1.10	1.20	2.45	1.70
22.....	1.80	1.65	1.75	2.00	1.70	1.70	1.50	1.50	1.50	1.20	2.00	1.65
23.....	1.75	1.65	1.70	2.65	1.90	2.00	1.40	1.40	4.29	1.20	3.25	3.85
24.....	1.75	1.80	1.70	2.10	1.90	1.80	1.40	1.50	2.05	1.20	3.45	3.55
25.....	1.70	1.85	1.70	2.00	1.80	1.90	1.45	1.40	1.70	1.20	2.55	2.35
26.....	1.80	2.10	1.80	1.90	2.10	1.80	1.40	1.40	1.50	1.20	2.20	2.10
27.....	1.70	2.00	1.70	2.20	1.90	1.65	1.40	1.30	1.45	1.45	2.00	2.00
28.....	1.70	2.90	1.65	2.00	1.80	3.20	1.50	1.30	1.40	1.35	1.90	1.90
29.....	1.70	.....	1.65	1.90	1.70	2.20	1.60	1.25	2.40	1.20	1.80	1.90
30.....	1.65	.....	1.60	1.90	1.70	1.80	1.50	1.20	1.80	1.20	1.70	4.30
31.....	1.70	.....	1.80	.....	2.20	.....	1.40	1.20	.....	1.20	.....	2.90

DAILY GAGE HEIGHT, IN FEET, OF TUCKASEEGEE RIVER AT BRYSON, N. C., FOR 1908.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1.....	2.55	2.30	2.40	2.20	2.45	1.90	1.40	1.30	1.45	1.15
2.....	2.30	1.95	2.45	2.20	2.30	1.80	1.40	1.30	1.40	1.10
3.....	2.20	1.85	2.50	2.20	2.20	1.80	1.75	1.30	1.40	1.10
4.....	2.25	1.90	2.45	2.15	2.10	2.10	1.85	1.30	1.40	1.10
5.....	3.00	1.90	2.45	2.10	2.05	1.90	2.25	1.45	1.95	1.10
6.....	2.45	2.10	2.40	2.10	2.10	1.80	2.20	2.50	2.00	1.10
7.....	2.30	1.90	2.50	2.00	3.15	1.80	2.00	1.80	1.60	1.00
8.....	2.20	1.90	2.50	2.00	2.45	1.70	2.15	1.65	1.50	1.00
9.....	2.10	1.85	2.40	1.95	2.30	1.70	2.20	1.70	1.40	1.20
10.....	2.00	1.90	2.30	1.90	2.30	1.70	2.20	1.60	1.40	1.90
11.....	2.50	2.00	2.30	1.90	2.10	2.00	1.95	1.50	1.35	1.35
12.....	4.60	2.45	3.10	1.80	2.05	1.75	1.80	1.40	1.30	1.20
13.....	3.25	2.80	2.50	1.80	2.00	1.70	1.70	1.30	1.30	1.20
14.....	2.95	3.15	2.40	1.80	2.00	1.80	1.70	1.30	1.30	1.15
15.....	2.55	6.60	2.30	2.50	2.00	1.95	1.60	1.40	1.30	1.15
16.....	2.50	3.85	2.20	2.50	1.95	1.80	1.65	1.40	1.25	1.10
17.....	2.40	3.20	2.10	2.30	2.10	1.70	1.60	1.45	1.25	1.10
18.....	2.30	2.85	2.10	2.20	2.20	1.60	1.50	1.50	1.25	1.10
19.....	2.20	2.95	2.00	2.25	2.95	1.60	1.85	1.40	1.20	1.10
20.....	2.10	2.60	2.65	2.10	2.35	1.60	1.50	1.40	1.20	1.10
21.....	2.10	2.55	3.20	2.00	2.30	1.60	1.40	1.30	1.20	1.10
22.....	2.10	2.35	2.75	1.90	2.10	1.60	1.45	2.55	1.20	1.10
23.....	2.00	2.35	3.70	1.90	2.00	1.60	1.45	1.85	1.20	1.85
24.....	1.90	2.20	4.60	1.90	2.20	1.60	1.50	2.00	1.20	1.60
25.....	1.90	2.25	3.40	4.90	2.05	1.85	1.40	2.95	1.15	1.40
26.....	1.90	2.35	3.95	3.40	2.15	1.60	1.40	2.20	1.15	1.25
27.....	2.10	2.20	2.75	2.90	2.10	1.50	1.40	1.85	1.10	1.10
28.....	1.90	2.00	2.60	2.65	2.05	1.50	1.50	1.70	1.25	1.45
29.....	1.90	2.10	2.45	2.45	2.45	1.40	1.50	1.60	1.20	2.30
30.....	1.80		3.30	2.50	2.25	1.40	1.40	1.55	1.15	1.90
31.....	1.80		2.30		1.95		1.40	1.50		1.60

RATING TABLE FOR TUCKASEEGEE RIVER AT BRYSON, N. C., FOR 1897 AND 1898.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.0	168	2.8	2,900	4.6	8,850	6.4	16,500
1.1	234	2.9	3,075	4.7	9,275	6.5	16,925
1.2	400	3.0	3,250	4.8	9,700	6.6	17,350
1.3	535	3.1	3,425	4.9	10,125	6.7	17,775
1.4	670	3.2	3,600	5.0	10,550	6.8	18,200
1.5	810	3.3	3,825	5.1	10,975	6.9	18,625
1.6	950	3.4	4,050	5.2	11,400	7.0	19,050
1.7	1,100	3.5	4,425	5.3	11,825	7.1	19,500
1.8	1,250	3.6	4,800	5.4	12,250	7.2	19,950
1.9	1,400	3.7	5,175	5.5	12,675	7.3	20,400
2.0	1,550	3.8	5,550	5.6	13,100	7.4	20,850
2.1	1,710	3.9	5,950	5.7	13,525	7.5	21,300
2.2	1,870	4.0	6,350	5.8	13,950	7.6	21,750
2.3	2,035	4.1	6,750	5.9	14,375	7.7	22,300
2.4	2,200	4.2	7,150	6.0	14,800	7.8	22,650
2.5	2,375	4.3	7,575	6.1	15,225	7.9	23,100
2.6	2,550	4.4	8,000	6.2	15,650	8.0	23,550
2.7	2,725	4.5	8,425	6.3	16,075		

RATING TABLE FOR TUCKASEEGEE RIVER AT BRYSON, N. C., FOR 1899.

Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).
1.0	300	2.6	2,330	4.2	7,150	7.0	19,050
1.2	460	2.8	2,720	4.4	8,000	7.5	21,300
1.4	620	3.0	3,150	4.6	8,850	8.0	23,550
1.6	824	3.2	3,620	4.8	9,700	8.5	26,050
1.8	1,072	3.4	4,160	5.0	10,550	9.0	28,550
2.0	1,320	3.6	4,800	5.5	12,675	9.5	31,050
2.2	1,652	3.8	5,530	6.0	14,800	10.0	33,550
2.4	1,984	4.0	6,320	6.5	16,925	11.0	38,550

RATING TABLE FOR TUCKASEEGEE RIVER AT BRYSON, N. C., FOR 1900.

1.0	300	2.6	2,540	4.2	6,400	7.0	19,175
1.2	500	2.8	2,900	4.4	7,050	7.5	22,050
1.4	700	3.0	3,260	4.6	7,700	8.0	24,925
1.6	950	3.2	3,650	4.8	8,350	8.5	27,800
1.8	1,200	3.4	4,075	5.0	9,000	9.0	30,675
2.0	1,510	3.6	4,550	5.5	10,950	9.5	33,550
2.2	1,850	3.8	5,125	6.0	13,450	10.0	36,425
2.4	2,190	4.0	5,750	6.5	16,300	11.0	42,300

RATING TABLE FOR TUCKASEEGEE RIVER AT BRYSON, N. C., FOR 1901.

1.0	400	3.2	4,110	5.4	10,250	7.6	22,480
1.2	600	3.4	4,565	5.6	11,125	7.8	23,640
1.4	830	3.6	5,035	5.8	12,100	8.0	24,800
1.6	1,080	3.8	5,515	6.0	13,200	8.5	27,700
1.8	1,370	4.0	6,000	6.2	14,360	9.0	30,600
2.0	1,700	4.2	6,510	6.4	15,520	9.5	33,500
2.2	2,065	4.4	7,060	6.6	16,680	10.0	36,400
2.4	2,450	4.6	7,640	6.8	17,840	10.5	39,300
2.6	2,850	4.8	8,220	7.0	19,000	11.0	42,200
2.8	3,260	5.0	8,800	7.2	20,160		
3.0	3,675	5.2	9,475	7.4	21,320		

RATING TABLE FOR TUCKASEEGEE RIVER AT BRYSON, N. C., FOR 1902.

1.0	400	3.2	4,110	5.4	10,250	7.6	22,480
1.2	600	3.4	4,565	5.6	11,125	7.8	23,640
1.4	830	3.6	5,035	5.8	12,100	8.0	24,800
1.6	1,080	3.8	5,515	6.0	13,200	8.5	27,700
1.8	1,370	4.0	6,000	6.2	14,360	9.0	30,600
2.0	1,700	4.2	6,510	6.4	15,520	9.5	33,500
2.2	2,065	4.4	7,060	6.6	16,680	10.0	36,400
2.4	2,450	4.6	7,640	6.8	17,840	10.5	39,300
2.6	2,850	4.8	8,220	7.0	19,000	11.0	42,200
2.8	3,260	5.0	8,800	7.2	20,160		
3.0	3,675	5.2	9,475	7.4	21,320		

RATING TABLE FOR TUCKASEEGEE RIVER AT BRYSON, N. C., FOR 1903.

Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).
0.9	380	2.7	2,850	4.5	7,220	6.3	14,940
1.0	460	2.8	3,050	4.6	7,530	6.4	15,520
1.1	550	2.9	3,250	4.7	7,840	6.5	16,100
1.2	640	3.0	3,460	4.8	8,160	6.6	16,680
1.3	730	3.1	3,670	4.9	8,480	6.7	17,260
1.4	830	3.2	3,890	5.0	8,800	6.8	17,840
1.5	940	3.3	4,110	5.1	9,125	6.9	18,420
1.6	1,060	3.4	4,330	5.2	9,475	7.0	19,000
1.7	1,180	3.5	4,560	5.3	9,850	7.2	20,160
1.8	1,310	3.6	4,800	5.4	10,250	7.4	21,320
1.9	1,450	3.7	5,040	5.5	10,675	7.6	22,480
2.0	1,600	3.8	5,290	5.6	11,125	7.8	23,640
2.1	1,760	3.9	5,540	5.7	11,600	8.0	24,800
2.2	1,930	4.0	5,800	5.8	12,100	8.2	25,960
2.3	2,100	4.1	6,070	5.9	12,625	8.4	27,120
2.4	2,280	4.2	6,350	6.0	13,200	8.6	28,280
2.5	2,470	4.3	6,630	6.1	13,780	8.8	29,440
2.6	2,660	4.4	6,920	6.2	14,360	9.0	30,600

Table well determined to 3-foot gage height. Above 5 feet, 1901, 1902, and 1903 rating tables are the same.

RATING TABLE FOR TUCKASEEGEE RIVER AT BRYSON, N. C., FOR 1904-1907.

0.90	380	2.00	1,660	3.10	3,670	4.40	6,920
1.00	460	2.10	1,810	3.20	3,890	4.60	7,530
1.10	550	2.20	1,970	3.30	4,110	4.80	8,160
1.20	650	2.30	2,130	3.40	4,330	5.00	8,800
1.30	750	2.40	2,300	3.50	4,560	5.20	9,475
1.40	860	2.50	2,480	3.60	4,800	5.40	10,250
1.50	980	2.60	2,660	3.70	5,040	5.60	11,125
1.60	1,100	2.70	2,850	3.80	5,290	5.80	12,100
1.70	1,230	2.80	3,050	3.90	5,540	6.00	13,200
1.80	1,370	2.90	3,250	4.00	5,800	6.20	14,360
1.90	1,510	3.00	3,460	4.20	6,350	6.40	15,520

NOTE.—The above table is based on discharge measurements made during 1904 to 1907. It is well defined to gage height 3 feet. Above gage height 6 feet the rating curve is a tangent the difference being 580 per tenth.

ESTIMATED MONTHLY DISCHARGE OF TUCKAHEEGEE RIVER AT BRYSON, N. C.  
[Drainage area, 662 square miles.]

Month.	Discharge in Second-feet.			Total in Acre-feet.	Run-off.	
	Maxi- mum.	Mini- mum.	Mean.		Second- feet per Square Mile.	Depth in Inches.
1898.						
January.....	8,425	400	1,910	117,442	2.88	3.32
February.....	1,325	602	893	49,595	1.35	1.41
March.....	17,775	535	1,939	119,225	2.93	3.38
April.....	3,425	1,475	2,107	125,375	3.18	3.55
May.....	1,550	810	1,155	71,019	1.74	2.01
June.....	1,400	467	672	39,987	1.01	1.13
July.....	2,200	535	1,149	70,650	1.74	2.01
August.....	22,650	1,175	3,373	207,399	5.09	5.87
September.....	26,050	1,100	3,876	230,638	5.86	6.72
October.....	21,750	1,100	3,826	235,253	5.78	6.66
November.....	2,375	1,250	1,763	104,906	2.66	2.97
December.....	3,075	950	1,838	113,015	2.78	3.21
The year.....	26,050	400	2,042	1,484,504	3.08	42.24
1899.						
January, 29 days.....	3,150	1,072	1,733	106,558	2.62	3.02
February, 27 days.....	28,550	1,134	5,853	325,059	8.84	9.21
March.....	38,550	1,735	7,617	468,351	11.51	13.27
April.....	4,800	1,984	2,972	176,846	4.49	5.01
May.....	3,150	1,072	1,815	111,600	2.74	3.16
June.....	4,470	700	1,207	71,821	1.82	2.03
July.....	1,320	540	740	45,501	1.12	1.29
August.....	700	460	557	34,249	.84	.97
September.....	620	300	427	25,408	.65	.72
October.....	1,320	300	437	26,870	.66	.76
November.....	1,072	300	450	26,777	.68	.75
December.....	16,925	540	1,354	83,254	2.05	2.36
The year.....	38,550	300	2,097	1,502,294	3.17	42.55
1900.						
January.....	3,450	825	2,037	125,250	3.08	3.55
February.....	24,925	950	4,197	233,090	6.34	6.60
March.....	16,012	1,850	3,577	219,941	5.40	6.22
April.....	5,425	1,680	2,429	144,536	3.67	4.10
May.....	2,020	700	1,288	79,196	1.95	2.25
June.....	6,725	825	2,425	144,297	3.60	4.09
July.....	2,360	950	1,565	96,228	2.36	2.73
August.....	1,350	550	764	46,976	1.15	1.33
September.....	3,080	450	760	45,223	1.15	1.28
October.....	9,700	400	898	55,216	1.36	1.57
November.....	8,350	450	1,097	65,276	1.66	1.85
December.....	3,850	700	1,257	77,290	1.90	2.19
The year.....	24,925	400	1,858	1,332,519	2.81	37.76

ESTIMATED MONTHLY DISCHARGE OF TUCKAHEEGEE RIVER AT BRYAN, N. C.—Continued.  
[Drainage area, 662 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maximum.	Minimum.	Mean.	Second-feet per Square Mile.	Depth in Inches.
1901.					
January.....	19,580	1,015	2,432	3.67	4.23
February.....	3,675	950	1,536	2.32	2.41
March.....	17,550	950	2,862	4.32	4.98
April.....	11,125	2,255	3,528	5.78	6.45
May.....	26,250	1,370	3,536	5.34	6.15
June.....	3,675	1,700	2,255	3.41	3.81
July.....	2,850	830	1,230	1.99	2.15
August.....	19,000	710	4,653	7.03	8.10
September.....	5,515	1,295	2,003	3.02	3.37
October.....	2,650	830	1,034	1.56	1.80
November.....	950	600	707	1.07	1.19
December.....	35,820	600	4,285	6.47	7.46
The year.....	35,820	600	2,532	3.82	52.13
1902.					
January.....	5,515	1,150	2,173	3.28	3.78
February.....	35,820	830	3,547	5.36	5.58
March.....	14,650	2,255	4,467	6.75	7.78
April.....	3,990	1,530	2,341	3.54	3.95
May.....	2,065	1,080	1,395	2.11	2.43
June.....	1,530	710	962	1.45	1.62
July.....	1,295	500	738	1.11	1.28
August.....	830	300	469	.71	.82
September.....	6,000	350	1,004	1.52	1.70
October.....	1,295	500	636	.96	1.11
November.....	4,682	500	929	1.40	1.56
December.....	6,000	950	1,723	2.60	3.00
The year.....	35,820	300	1,699	2.57	34.61
1903.					
January.....	2,470	940	1,258	1.90	2.19
February.....	23,640	1,070	4,502	6.80	7.08
March.....	25,960	2,240	5,102	7.71	8.89
April.....	16,100	2,100	4,123	6.23	6.95
May.....	2,015	1,060	1,467	2.22	2.56
June.....	4,110	940	1,683	2.54	2.83
July.....	1,525	685	952	1.44	1.66
August.....	1,180	550	725	1.10	1.27
September.....	940	420	531	.80	.89
October.....	1,060	380	467	.71	.82
November.....	5,800	380	704	1.06	1.18
December.....	1,310	380	539	.81	.93
The year.....	25,960	380	1,838	2.78	37.25

ESTIMATED MONTHLY DISCHARGE OF TUCKASEEGEE RIVER AT BRYSON, N. C.—Continued.  
[Drainage area, 662 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maxi- mum.	Mini- mum.	Mean.	Second- feet per Square Mile.	Depth in Inches.
1904.					
January.....	10,250	380	1,026	1.55	1.79
February.....	3,050	550	1,103	1.67	1.80
March.....	8,160	860	2,061	3.11	3.58
April.....	2,660	980	1,378	2.08	2.32
May.....	5,540	750	1,286	1.94	2.24
June.....	1,660	700	942	1.42	1.58
July.....	1,100	350	743	1.12	1.29
August.....	1,660	650	921	1.39	1.60
September.....	980	420	586	.885	.986
October.....	460	340	383	.579	.668
November.....	980	340	457	.690	.770
December.....	3,050	420	805	1.22	1.41
The year.....	10,250	340	974	1.47	20.03
1905.					
January.....	14,250	650	1,542	2.33	2.69
February.....	5,800	650	2,348	3.55	3.70
March.....	5,290	1,230	1,880	2.84	3.27
April.....	2,130	980	1,312	1.98	2.21
May.....	3,670	1,230	1,680	2.54	2.93
June.....	1,970	860	1,149	1.74	1.94
July.....	9,475	920	1,849	2.79	3.22
August.....	4,110	920	1,527	2.31	2.66
September.....	1,230	550	731	1.10	1.23
October.....	2,755	550	720	1.09	1.26
November.....	750	505	563	.85	.948
December.....	9,475	550	1,828	2.76	3.18
The year.....	14,250	505	1,427	2.16	29.24
1906.					
January.....	10,700	1,100	2,870	4.34	5.00
February.....	1,970	1,100	1,390	2.10	2.19
March.....	6,350	1,100	2,190	3.31	3.82
April.....	5,160	1,440	2,170	3.28	3.66
May.....	2,300	860	1,300	1.96	2.26
June.....	5,040	980	1,750	2.64	2.94
July.....	4,220	1,100	1,930	2.92	3.37
August.....	4,800	1,100	1,900	2.87	3.31
September.....	14,400	1,230	3,070	4.64	5.18
October.....	8,160	1,370	2,960	4.47	5.15
November.....	36,400	1,100	3,230	4.88	5.44
December.....	5,800	1,370	2,040	3.08	3.55
The year.....	36,400	860	2,230	3.37	45.87

NOTE.—Values for 1906 are excellent.



## ESTIMATED MONTHLY DISCHARGE OF TUCKASEEGEE RIVER AT BRYSON, N. C.—Continued.

[Drainage area, 662 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maximum.	Minimum.	Mean.	Second-feet per Square Mile.	Depth in Inches.
1907.					
January.....	3,050	1,160	1,620	2.45	2.62
February.....	3,250	1,160	1,690	2.55	2.66
March.....	3,890	1,100	1,810	2.73	3.15
April.....	2,760	1,100	1,490	2.24	2.50
May.....	3,050	1,230	1,760	2.66	3.07
June.....	3,890	1,040	1,640	2.48	2.77
July.....	2,390	860	1,170	1.77	2.04
August.....	1,370	650	861	1.30	1.50
September.....	6,350	550	1,060	1.60	1.78
October.....	1,440	650	791	1.19	1.37
November.....	4,440	650	1,480	2.24	2.50
December.....	6,630	860	1,960	2.99	3.45
The year.....	6,630	550	1,450	2.18	29.61

## TUCKASEEGEE RIVER NEAR EAST LAPORT, N. C.

The station at this place was established on May 27, 1907.

It is located at the steel wagon bridge about 2 miles from East Lafort, and 10 miles from Dillsboro, N. C.

The vertical gage is located on the left bank, about 75 feet below the bridge; fastened to a special post, or scantling driven in the bed of the stream and spiked to a tree.

Discharge measurements are made from the bridge, which is a single span supported on tubular piers.

The current is good, and the bed is partly rock and should be fairly constant. The left bank is above high water, and the right will not overflow except at very high stage.

The bench mark is the top of the downstream end of the third floor beam from the left end of the bridge; elevation, 21.25 feet.

## DISCHARGE MEASUREMENTS OF TUCKASEEGEE RIVER NEAR EAST LAPORT, N. C.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second-feet).
1907.						
May 27	F. A. Murray.....	113	228	2.01	2.00	459
Aug. 26	Frank P. Thomas.....	107	172	1.27	1.20	230
Aug. 26	do.....	107	172	1.42	1.20	244
Oct. 21	Olin P. Hall.....	98	153	1.29	1.15	197

DAILY GAGE HEIGHT, IN FEET, OF TUCKASEE RIVER NEAR EAST LAPORT, N. C., FOR 1907.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....		3.20	1.80	1.40	1.40	1.50	1.20	1.60
2.....		2.40	1.70	1.30	1.30	1.50	2.10	1.50
3.....		2.20	2.00	1.30	1.30	1.50	1.50	1.40
4.....		2.10	1.80	1.30	1.20	1.50	1.20	1.30
5.....		2.00	1.70	1.30	1.20	1.50	1.20	1.20
6.....		1.90	1.70	1.30	1.10	1.40	1.20	1.20
7.....		1.90	1.60	1.30	1.10	1.40	1.20	1.20
8.....		2.80	1.50	1.40	1.30	1.30	1.10	1.20
9.....		2.10	1.50	1.40	1.20	1.30	1.10	1.40
10.....		2.00	1.50	1.40	1.10	1.30	1.50	3.90
11.....		1.80	1.60	1.40	1.10	1.30	1.40	2.50
12.....		1.80	2.00	1.40	1.10	1.30	1.40	2.00
13.....		1.80	1.80	1.40	1.10	1.20	1.30	2.00
14.....		1.90	1.60	1.40	1.10	1.20	1.30	4.00
15.....		1.80	1.60	1.40	1.10	1.20	1.30	3.00
16.....		1.70	1.70	1.50	1.10	1.20	1.30	2.50
17.....		1.60	1.70	1.50	1.10	1.20	1.30	2.40
18.....		1.60	1.60	1.60	1.10	1.20	1.60	2.30
19.....		1.90	1.50	1.50	1.10	1.20	1.50	2.00
20.....		1.70	1.50	1.40	1.00	1.20	1.50	2.00
21.....		1.70	1.60	1.30	1.10	1.20	3.50	1.80
22.....		1.80	1.60	1.30	1.10	1.20	2.20	1.70
23.....		1.90	1.50	1.30	5.00	1.20	3.40	5.00
24.....		2.00	1.40	1.30	3.00	1.20	3.50	4.00
25.....		2.10	1.50	1.20	2.00	1.20	2.20	3.00
26.....		1.90	1.50	1.20	1.40	1.20	2.00	2.50
27.....	2.00	1.80	1.40	1.20	1.40	1.20	2.00	2.40
28.....	1.90	2.00	1.40	1.20	1.30	1.20	1.90	2.20
29.....	1.80	2.00	1.40	1.20	1.30	1.20	1.90	2.00
30.....	1.90	1.80	1.70	1.20	1.30	1.20	1.70	4.00
31.....	2.00		1.40	1.20		1.20		3.00

DAILY GAGE HEIGHT, IN FEET, OF TUCKASEEGEE RIVER NEAR EAST LAPORT, N. C., FOR 1908.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1.....	2.60	3.00	2.00	2.40	2.50	2.00	1.50	1.60	1.60	1.20
2.....	2.50	2.70	2.00	2.30	2.50	2.00	1.50	1.50	1.60	1.20
3.....	2.20	2.60	2.00	2.30	2.40	2.00	1.70	1.50	1.50	1.20
4.....	2.10	2.30	2.10	2.20	2.30	2.00	1.70	1.50	1.50	1.20
5.....	2.90	2.20	2.20	2.20	2.30	1.90	2.60	1.60	1.50	1.20
6.....	2.70	2.40	2.40	2.20	2.30	1.90	2.20	1.90	1.90	1.10
7.....	2.60	2.30	2.30	2.20	4.50	1.80	2.50	1.80	1.80	1.10
8.....	2.40	2.20	2.30	2.20	3.00	1.80	2.60	1.70	1.80	1.10
9.....	2.20	2.20	2.30	2.20	2.90	1.80	2.60	1.60	1.70	1.20
10.....	2.10	2.20	2.20	2.10	2.60	2.40	2.50	1.50	1.60	2.50
11.....	7.00	2.30	2.20	2.10	2.40	2.10	2.40	1.50	1.50	2.30
12.....	5.50	3.00	3.00	2.10	2.30	2.00	2.10	1.40	1.50	1.30
13.....	4.00	3.40	2.50	2.00	2.20	2.00	1.90	1.40	1.50	1.30
14.....	3.40	3.60	2.50	2.00	2.20	2.10	1.80	1.40	1.40	1.30
15.....	3.00	9.60	2.40	4.00	2.10	2.30	1.70	1.50	1.40	1.30
16.....	2.90	4.00	2.40	3.00	2.10	1.90	2.00	1.50	1.40	1.20
17.....	2.80	3.20	2.30	2.80	2.20	1.80	1.90	1.50	1.40	1.20
18.....	2.60	3.00	2.30	2.50	2.20	1.80	1.80	1.40	1.30	1.20
19.....	2.60	3.00	2.20	2.40	2.10	1.70	1.70	1.40	1.30	1.10
20.....	2.50	2.80	2.20	2.30	2.10	1.90	1.60	1.90	1.30	1.10
21.....	2.40	2.70	3.00	2.20	2.10	1.80	1.60	2.00	1.30	1.10
22.....	2.30	2.60	2.80	2.10	2.00	1.70	1.50	3.40	1.30	1.10
23.....	2.30	2.60	2.70	2.10	2.00	1.70	1.50	2.70	1.30	2.60
24.....	2.20	2.50	4.20	2.00	2.10	1.70	1.50	2.30	1.20	2.00
25.....	2.10	2.40	3.50	6.40	2.00	1.70	1.40	3.70	1.20	1.50
26.....	2.20	2.20	3.00	4.00	2.00	1.70	1.30	2.60	1.20	1.40
27.....	2.20	2.00	3.00	3.00	2.40	1.60	1.50	2.50	1.30	1.40
28.....	2.20	2.50	2.90	2.70	2.50	1.60	1.60	2.40	1.30	2.20
29.....	2.10	2.00	2.60	2.60	2.60	1.60	1.70	2.10	1.20	2.90
30.....	2.10	.....	2.50	2.50	2.40	1.50	1.70	1.90	1.20	2.00
31.....	2.10	.....	2.50	.....	2.10	.....	1.60	1.60	.....	2.80

RATING TABLE FOR TUCKASEEGEE RIVER NEAR EAST LAPORT, N. C., FOR 1907 AND 1908.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.00	160	1.35	250	1.70	355	2.05	490
1.05	170	1.40	265	1.75	372	2.10	510
1.10	180	1.45	280	1.80	390	2.15	535
1.15	192	1.50	295	1.85	410	2.20	560
1.20	205	1.55	310	1.90	430	2.25	585
1.25	220	1.60	325	1.95	450	2.30	610
1.30	235	1.65	340	2.00	470	.....	.....

## OCONALUFTY RIVER NEAR CHEROKEE, N. C.

This station was established on August 27, 1907. It is located about 500 feet below the mouth of Soco Creek, a large tributary of Oconalufly River.

The gage is a vertical rod attached to a tree on the left bank of river.

Discharge measurements are made from a boat at ordinary times, but can also be made in two parts by measuring Soco Creek, and the river above the junction, both measurements being made from bridges.

The station is  $1\frac{1}{2}$  miles from Cherokee Post-office, and about 5 miles from Whittier, the nearest railroad point.

## DISCHARGE MEASUREMENTS OF OCONALUFTY RIVER NEAR CHEROKEE, N. C.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1907.						
Aug. 27	F. A. Murray	100	250	0.95	1.81	237
Oct. 19	Olin P. Hall	98	230	1.01	1.67	232

## DAILY GAGE HEIGHT, IN FEET, OF OCONALUFTY RIVER NEAR CHEROKEE, N. C., FOR 1907.

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....		1.70	2.70	2.80	2.10	17.....		1.75	1.70	2.60	2.20
2.....		1.70	2.60	2.50	2.10	18.....		1.80	1.65	2.90	2.20
3.....		1.70	2.50	2.40	2.00	19.....		1.75	1.65	2.60	2.00
4.....		1.70	1.90	2.45	2.00	20.....		1.60	1.65	2.10	1.95
5.....		1.65	2.00	2.40	1.95	21.....		1.60	1.60	2.75	3.20
6.....		1.60	2.00	2.35	1.90	22.....		2.40	1.60	2.50	3.00
7.....		1.60	2.10	2.30	1.90	23.....		3.60	1.60	5.30	3.30
8.....		1.95	2.00	2.25	1.90	24.....		3.00	1.60	4.00	2.10
9.....		1.85	1.90	2.20	1.85	25.....		2.80	1.55	3.40	2.10
10.....		1.75	1.85	3.20	3.00	26.....		2.75	1.55	3.10	2.10
11.....		2.40	1.80	2.20	2.75	27.....	1.80	2.00	1.70	2.85	2.10
12.....		1.85	1.80	2.15	2.35	28.....	1.95	3.00	1.70	2.70	2.10
13.....		1.80	1.80	2.10	2.50	29.....	1.80	2.80	1.65	2.50	2.80
14.....		1.80	1.75	2.80	2.40	30.....	1.75	2.75	1.65	2.10	5.00
15.....		1.80	1.70	2.75	2.40	31.....	1.70		1.60		3.10
16.....		1.80	1.70	2.65	2.30						

DAILY GAGE HEIGHT, IN FEET, OF OCONALUFITY RIVER NEAR CHEROKEE, N. C., FOR 1908.

Day.	Jan.	Feb.	Mar.	Apr.	May.	Day.	Jan.	Feb.	Mar.	Apr.	May.
1.....	2 00	2 20	2 40	2 10	2 30	17.....	2 20	3 10	2 10	2 10	3 00
2.....	3 40	2 30	3 00	2 15	2 20	18.....	2 20	3 00	2 15	2 10	2 10
3.....	2 50	2 30	2 40	2 10	2 10	19.....	2 10	2 30	2 10	2 15	4 00
4.....	2 50	2 30	2 30	2 10	2 10	20.....	2 10	2 20	4 20	2 10	3 00
5.....	3 00	2 20	2 10	2 15	2 15	21.....	2 15	2 15	3 10	2 15	2 10
6.....	2 50	2 10	3 00	2 10	2 10	22.....	2 20	2 10	3 15	2 20	2 15
7.....	2 10	2 20	3 00	2 20	3 50	23.....	2 20	2 10	4 70	2 30	2 10
8.....	2 15	2 10	2 40	2 15	2 10	24.....	2 20	2 15	3 00	2 10	2 15
9.....	2 15	2 10	2 10	2 10	2 15	25.....	2 15	2 10	3 10	7 00	2 30
10.....	2 15	2 20	2 10	2 20	2 10	26.....	2 15	2 15	3 15	3 10	2 10
11.....	3 10	2 20	2 15	2 20	2 10	27.....	2 20	2 15	2 10	3 20	2 15
12.....	3 10	2 10	2 40	2 10	2 15	28.....	2 30	2 10	2 10	2 10	2 20
13.....	3 10	3 00	3 00	2 15	2 10	29.....	2 10	2 15	2 15	2 10	3 00
14.....	3 30	3 10	2 40	2 10	2 20	30.....	2 15	.....	2 10	2 10	2 15
15.....	2 15	7 00	2 10	3 10	2 10	31.....	2 10	.....	2 15	.....	2 20
16.....	2 15	4 20	2 10	3 10	2 15						

RATING TABLE FOR OCONALUFITY RIVER NEAR CHEROKEE, N. C., FOR 1907 AND 1908.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.60	200	1.65	285	2.10	390	2.35	510
1.65	215	1.90	305	2.15	412	2 40	535
1.70	230	1.95	325	2.20	435	2 45	560
1.75	247	2.00	345	2.25	460	2 50	585
1.80	265	2.05	367	2.30	485		

## SOCO CREEK NEAR CHEROKEE, N. C.

There is no gage at this station, but discharge measurements were made at the wagon bridge, about 500 feet above the mouth of creek, whenever they were made at the Oconalufity River station, just below.

The gage heights of the measurements are determined by measuring down from a nail in top of the upstream stringer, 4 feet to the left of the right bank pier; elevation 10 feet above datum. The datum of this bench mark is in no ways connected with that of the Oconalufity River gage.

DISCHARGE MEASUREMENTS OF SOCO CREEK NEAR CHEROKEE, N. C.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second-feet).
1907.						
Aug. 27	F. A. Murray.....	37	60	0.48	1.76	29
Oct. 19	Olin P. Hall.....	40	65	.55	1.78	36

## SCOTT'S CREEK NEAR DILLSBORO, N. C.

This station was established on August 26, 1907. It is at a footbridge about 1 mile from Dillsboro, and about the same distance above the mouth of the creek, which is a large tributary of Tuckaseegee River.

The vertical gage is attached to the maple trees which serve as a support for the footbridge, on the left bank.

The discharge measurements are made from the footbridge.

The right bank does not overflow, but at high stages water surrounds the left bank approach to the bridge. The current is mostly swift, and bed is fairly constant.

The bench mark is a nail in the downstream side of the large maple tree at upper edge of the bridge and the left bank; elevation 8.00 feet.

## DISCHARGE MEASUREMENTS OF SCOTT'S CREEK NEAR DILLSBORO, N. C.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1907.						
Aug. 26	F. A. Murray	30	66	1.29	1.63	85
Oct. 21	Olin P. Hall	40	63	1.25	1.61	79

## DAILY GAGE HEIGHT, IN FEET, OF SCOTT'S CREEK NEAR DILLSBORO, N. C., FOR 1907.

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....		1.60	1.80	1.60	1.80	17.....		1.65	1.60	1.70	1.85
2.....		1.60	1.80	2.05	1.80	18.....		1.60	1.60	2.05	1.80
3.....		2.10	1.70	1.75	1.80	19.....		1.60	1.60	1.80	1.80
4.....		1.75	1.80	1.65	1.80	20.....		1.60	1.60	1.75	1.75
5.....		1.65	1.90	1.65	1.70	21.....		1.60	1.60	2.00	1.80
6.....		1.60	1.80	1.60	1.80	22.....		2.60	1.60	1.95	1.80
7.....		1.60	1.75	1.60	1.75	23.....		2.85	1.60	2.70	2.20
8.....		2.25	1.80	1.60	1.70	24.....		1.80	1.60	2.30	2.00
9.....		1.70	1.70	1.60	1.90	25.....		1.70	1.60	2.10	1.90
10.....		1.70	1.70	2.35	2.35	26.....	1.60	1.70	1.60	2.00	1.90
11.....		1.75	1.70	1.85	2.00	27.....	1.60	1.70	1.85	2.00	1.90
12.....		1.70	1.70	1.80	1.90	28.....	1.65	2.10	1.70	1.90	1.90
13.....		1.65	1.65	1.80	1.95	29.....	1.60	2.00	1.60	1.90	1.90
14.....		1.60	1.60	1.70	2.00	30.....	1.60	1.85	1.60	1.80	2.80
15.....		1.60	1.60	1.70	1.90	31.....	1.60		1.60		2.20
16.....		1.65	1.60	1.70	1.90						

DAILY GAGE HEIGHT, IN FEET, OF SCOTT'S CREEK NEAR DILLSBORO, N. C., FOR 1908.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1.....	2.00	3.80	2.15	2.20	2.10	1.90	17.....	2.10	2.35	2.00	2.00	2.10	1.90
2.....	2.00	1.90	2.15	2.10	2.10	1.90	18.....	2.10	2.30	2.00	2.10	2.10	1.85
3.....	2.00	1.90	2.10	2.10	2.10	1.95	19.....	2.00	2.30	2.05	2.05	2.40	1.80
4.....	2.45	2.00	2.10	2.10	2.00	1.95	20.....	2.00	2.20	2.60	2.00	2.10	1.85
5.....	2.20	2.00	2.10	2.20	2.00	1.90	21.....	2.00	2.20	2.45	2.00	2.05	1.90
6.....	2.10	2.05	2.10	2.10	2.00	1.90	22.....	2.00	2.10	2.30	1.95	2.00	1.80
7.....	2.10	2.00	2.10	2.10	2.45	1.90	23.....	2.00	2.10	3.40	1.95	2.25	1.80
8.....	2.00	1.95	2.10	2.10	2.15	1.85	24.....	1.95	2.00	2.90	1.90	2.10	1.90
9.....	2.00	1.90	2.00	2.05	2.10	1.85	25.....	1.95	2.05	2.60	3.00	2.15	1.80
10.....	2.00	2.00	2.00	2.00	2.10	1.85	26.....	2.00	2.10	2.40	2.35	2.10	1.80
11.....	2.55	2.10	2.15	2.00	2.00	1.80	27.....	1.95	2.00	2.40	2.25	2.00	1.80
12.....	2.45	2.15	2.40	2.00	2.00	1.80	28.....	1.90	2.00	2.30	2.15	2.15	1.70
13.....	2.25	2.20	2.10	1.95	2.00	1.95	29.....	1.90	2.10	2.25	2.10	2.10	1.70
14.....	2.20	2.65	2.10	1.95	2.00	2.05	30.....	1.90	.....	2.20	2.20	2.00	1.70
15.....	2.20	3.00	2.05	2.30	2.00	2.15	31.....	1.90	.....	2.20	.....	2.00	.....
16.....	2.20	2.45	2.00	2.10	2.05	1.90							

RATING TABLE FOR SCOTT'S CREEK NEAR DILLSBORO, N. C., FOR 1907 AND 1908.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.60	78	1.80	110	2.00	150	2.20	190
1.65	86	1.85	120	2.05	160	2.25	200
1.70	92	1.90	130	2.10	170	2.30	210
1.75	101	1.95	140	2.15	180		

## NANTAHALA RIVER NEAR NANTAHALA, N. C.

This station was established on May 22, 1907, though discharge measurements referred to a bench mark which had been made before. It is at Mathew Cole's footbridge, about 1 mile above Nantahala.

The vertical gage is attached to the right bank abutment of the bridge from which the discharge measurements are made.

The banks are low, but will hardly ever overflow. The bed is rough and rocky and the current is swift and considerably broken.

A lumber flume, taking its water from a tributary creek several miles above, passes the station. The water flowing in this flume is measured when the station is visited, but the flow is not included with the regular measurements. The records for the station include the water in the river only, and the amount in the flume may be added to give total flow. This, however, presumes that the flume flow is continuous, which may not be true at all times.

The bench mark is a nail in a black locust tree on the left bank 20 feet below the bridge; elevation 3.73 feet.

## DISCHARGE MEASUREMENTS OF NANTAHALA RIVER NEAR NANTAHALA, N. C.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1904.						
Oct. 8	Olin P. Hall	50	120	0.96	0.82	115
1907.						
May 22	F. A. Murray	64	208	1.87	1.76	388
Aug. 23	Frank P. Thomas	66	190	1.72	1.50	326
Aug. 23	do.	66	190	1.71	1.50	323
Oct. 17	Olin P. Hall	60	171	1.35	1.25	231

## DAILY GAGE HEIGHT, IN FEET, OF NANTAHALA RIVER NEAR NANTAHALA, N. C., FOR 1907.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		3.00	1.70	1.40	1.20	1.70	1.20	1.60
2		2.35	1.70	1.40	1.20	1.55	2.05	1.60
3		2.15	1.75	1.40	1.20	1.50	1.65	1.60
4		2.00	1.70	1.40	1.20	1.50	1.50	1.50
5		1.90	1.70	1.40	1.20	1.70	1.40	1.50
6		1.90	1.70	1.40	1.20	1.45	1.40	1.50
7		1.85	1.70	1.40	1.20	1.40	1.30	1.50
8		2.55	1.70	1.30	1.25	1.60	1.30	1.50
9		2.15	1.65	1.30	1.25	1.40	1.30	1.70
10		2.00	1.50	1.30	1.10	1.35	2.30	2.50
11		2.00	1.50	1.30	1.55	1.30	1.75	1.95
12		1.90	2.15	1.30	1.30	1.30	1.60	1.90
13		1.80	2.00	1.55	1.20	1.30	1.60	1.90
14		1.80	1.75	1.50	1.15	1.25	1.50	2.45
15		1.80	1.60	2.00	1.10	1.20	1.50	2.10
16		1.70	1.60	1.65	1.10	1.20	1.50	2.00
17		1.70	1.60	1.45	1.10	1.20	1.40	1.90
18		1.70	1.60	1.50	1.05	1.20	1.40	1.90
19		1.70	1.70	1.50	1.00	1.20	1.40	1.80
20		1.70	1.70	1.40	1.00	1.20	1.40	1.80
21		1.70	1.60	1.50	1.00	1.20	1.80	1.70
22	1.70	1.70	1.50	1.50	1.10	1.20	1.80	1.70
23	1.70	2.05	1.45	1.50	4.00	1.20	2.40	2.75
24	1.70	1.90	1.40	1.50	3.00	1.20	2.65	2.15
25	1.75	1.75	1.40	1.50	1.60	1.10	2.30	2.00
26	2.25	1.70	1.40	1.45	1.40	1.10	2.05	2.00
27	2.05	1.75	1.40	1.30	1.40	1.55	1.90	1.95
28	1.85	1.90	1.40	1.30	2.00	1.40	1.85	1.90
29	1.80	2.35	1.70	1.30	2.10	1.20	1.80	2.00
30	1.80	1.75	1.75	1.30	1.75	1.20	1.70	3.60
31	2.55		1.50	1.25		1.20		2.75



DAILY GAGE HEIGHT, IN FEET, OF NANTAHALA RIVER NEAR NANTAHALA, N. C., FOR 1908.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1.....	2.45	2.50	2.00	2.20	2.30	1.75	1.30	1.30	1.40	1.10
2.....	2.30	2.00	2.25	2.15	2.15	1.70	1.30	1.30	1.40	1.10
3.....	2.20	2.00	2.20	2.10	2.10	1.70	1.50	1.30	1.40	1.10
4.....	2.30	2.00	2.20	2.10	2.10	1.70	1.65	1.30	1.30	1.10
5.....	2.80	2.00	2.20	2.10	2.10	1.70	1.95	1.20	2.20	1.10
6.....	2.45	2.20	2.20	2.00	2.00	1.70	1.85	2.00	1.75	1.10
7.....	2.35	2.10	2.20	2.00	2.55	1.70	1.60	1.50	1.45	1.10
8.....	2.30	2.00	2.10	2.00	2.15	1.70	1.90	1.60	1.40	1.10
9.....	2.20	2.00	2.10	2.00	2.10	1.70	2.00	1.80	1.30	1.30
10.....	2.10	2.05	2.00	1.95	2.10	1.70	1.85	1.55	1.30	1.50
11.....	2.40	2.00	2.20	1.90	2.10	1.70	1.70	1.40	1.30	1.20
12.....	3.60	2.20	2.65	1.90	2.05	1.60	1.65	1.40	1.30	1.10
13.....	3.00	2.65	2.35	1.85	2.00	1.60	1.60	1.35	1.30	1.10
14.....	2.75	2.80	2.30	1.80	1.95	1.80	1.60	1.30	1.20	1.10
15.....	2.50	4.20	2.20	2.55	1.90	1.70	1.55	1.30	1.20	1.05
16.....	2.45	3.35	2.15	2.30	1.90	1.70	1.50	1.30	1.20	1.00
17.....	2.40	3.00	2.10	2.15	1.90	1.55	1.50	1.30	1.20	1.00
18.....	2.30	2.90	2.10	2.10	1.90	1.50	1.45	1.25	1.20	1.00
19.....	2.30	2.90	2.00	2.10	1.90	1.50	1.60	1.55	1.20	1.00
20.....	2.30	2.40	2.50	2.05	1.90	1.50	1.50	1.50	1.20	1.00
21.....	2.10	2.30	2.35	2.00	1.90	1.50	1.40	1.50	1.20	1.00
22.....	2.10	2.30	2.30	2.00	1.80	1.50	1.35	2.05	1.10	1.00
23.....	2.00	2.25	2.60	1.95	1.80	1.50	1.30	1.75	1.10	2.20
24.....	2.00	2.20	3.65	1.90	1.90	1.45	1.30	1.70	1.10	1.50
25.....	2.00	2.20	3.00	3.60	1.90	1.40	1.30	2.40	1.10	1.30
26.....	2.20	2.20	2.75	2.65	1.95	1.40	1.30	1.90	1.10	1.30
27.....	2.20	2.20	2.70	2.40	1.85	1.40	1.30	1.65	1.10	1.25
28.....	2.00	2.20	2.55	2.30	1.80	1.40	1.30	1.60	1.30	1.20
29.....	2.00	2.20	2.45	2.30	1.80	1.40	1.60	1.60	1.25	1.85
30.....	2.00		2.40	2.30	1.80	1.30	1.45	1.50	1.10	1.50
31.....	2.00		2.30		1.80		1.30	1.40		1.40

RATING TABLE FOR NANTAHALA RIVER NEAR NANTAHALA, N. C., FOR 1907 AND 1908.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.00	165	1.30	252	1.60	342	1.90	438
1.05	179	1.35	267	1.65	358	1.95	454
1.10	193	1.40	282	1.70	374	2.00	470
1.15	207	1.45	297	1.75	390		
1.20	222	1.50	312	1.80	406		
1.25	237	1.55	327	1.85	422		

## CULLASAJA RIVER AT CULLASAJA, N. C.

This station was established June 13, 1907. It is located at Cullasaja, N. C., 5 miles southeast of Franklin, N. C.

The gage is a 10-foot vertical rod spiked to upstream post of left bank bridge pier, facing right bank.

Discharge measurements are made from upstream side of Cullasaja open wooden wagon bridge 110 feet long.

Both banks are high and are likely to overflow only during very high water. Bed of stream is rock and water is swift at all stages.

Bench mark is a nail in upstream side of a large beech tree on right bank about 40 feet below bridge. Its elevation is 7.00 feet.

## DISCHARGE MEASUREMENTS OF CULLASAJA RIVER AT CULLASAJA, N. C.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1907.						
June 13	F. A. Murray	37	90	2.08	1.60	187
July 18	do	36	79	1.66	1.32	131
July 18	B. M. Hall, Jr.	36	80	1.58	1.32	126
Aug. 20	F. A. Murray	33	67	1.16	.95	78
Aug. 29	do	33	71	1.18	.95	84
Nov. 9	do	34	64	1.25	.92	80
Nov. 9	do	34	64	1.28	.94	82

## DAILY GAGE HEIGHT, IN FEET, OF CULLASAJA RIVER AT CULLASAJA, N. C., FOR 1907.

Day.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		1.65	1.05	0.90	1.25	0.90	1.50
2		1.55	1.05	1.10	1.15	2.10	1.45
3		1.55	1.00	1.45	1.10	1.80	1.45
4		1.70	1.00	1.00	1.05	1.05	1.35
5		1.65	1.00	1.00	1.30	1.00	1.35
6		1.45	1.20	.95	1.00	1.00	1.35
7		1.40	1.00	1.00	1.00	1.00	1.35
8		1.40	1.00	.95	1.20	1.00	1.30
9		1.30	.95	.90	1.00	.95	2.30
10		1.30	.95	.90	1.00	1.05	3.00
11		1.35	1.10	1.20	.95	1.30	1.80
12		1.70	1.25	.85	.95	1.25	2.00
13	1.60	1.60	1.10	.85	.90	1.10	1.95
14	1.80	1.40	1.25	.90	.90	1.10	3.65
15	1.65	1.65	1.20	.90	.90	1.05	2.85
16	1.65	1.35	1.00	.90	.90	1.05	2.00
17	1.45	1.30	1.05	.85	.90	1.00	2.25
18	1.45	1.30	1.50	.85	.90	2.30	2.20
19	1.50	1.30	1.25	.85	.90	1.50	2.00
20	1.60	1.25	1.55	.80	.90	1.45	1.90
21	1.50	1.15	1.50	.80	.85	2.95	1.80
22	1.45	1.15	1.05	.95	.85	2.25	1.80
23	2.90	1.10	1.00	3.00	.85	2.85	4.00
24	1.75	1.30	1.10	1.65	.80	3.80	3.00
25	2.05	1.10	1.00	1.60	.80	2.40	2.65
26	1.80	1.10	.95	1.00	.80	2.10	2.50
27	1.75	1.10	.90	1.00	1.10	1.80	2.35
28	2.20	1.10	1.00	2.35	1.05	1.75	2.35
29	1.75	1.15	.95	1.80	1.00	1.65	2.15
30	1.40	1.40	.95	1.45	.95	1.60	3.90
31		1.20	.95		.90		2.80

DAILY GAGE HEIGHT IN FEET, OF CULLASAJA RIVER AT CULLASAJA, N. C., FOR 1905.

Day	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1	2.55	2.50	2.35	2.19	2.50	1.90	1.40	1.15	1.00	1.00
2	2.40	2.30	2.45	2.50	2.40	1.65	1.40	1.00	1.00	.90
3	2.15	2.15	2.30	2.00	2.35	1.60	1.50	1.35	1.10	.90
4	2.70	2.00	2.20	2.00	2.35	1.65	2.00	1.00	1.10	.90
5	2.90	1.95	2.25	2.05	2.25	1.90	1.70	1.15	2.40	.55
6	2.45	2.19	2.25	2.00	2.19	1.75	1.85	1.79	1.85	.55
7	2.35	1.95	2.20	1.90	3.00	1.55	1.90	1.30	1.45	.85
8	2.20	1.90	2.00	1.90	2.40	1.50	1.75	1.40	1.40	.85
9	2.10	1.90	2.05	1.85	2.30	1.50	2.50	1.50	1.30	1.55
10	2.00	2.05	2.05	1.85	2.25	1.50	1.95	1.30	1.20	1.90
11	4.10	2.30	2.25	1.90	2.25	1.50	1.55	1.25	1.00	1.10
12	4.50	2.90	2.35	1.75	2.10	1.65	1.55	1.15	1.00	1.00
13	3.40	3.19	2.05	1.70	2.00	1.50	1.55	1.10	1.00	1.00
14	3.05	3.20	2.10	1.70	2.00	*	1.70	1.05	1.00	1.00
15	2.85	6.00	2.00	2.50	2.00	2.25	1.60	1.00	1.10	1.00
16	2.90	4.50	2.00	2.35	2.00	1.90	1.50	1.05	1.10	.95
17	2.60	4.30	1.95	2.35	2.00	1.75	1.50	1.20	1.10	.90
18	2.45	3.10	1.90	2.30	2.00	1.65	1.50	1.15	1.05	.90
19	2.35	3.00	1.85	2.20	2.05	1.55	1.50	1.15	1.00	.90
20	2.25	2.90	2.00	2.05	2.00	1.55	1.45	1.10	1.00	.90
21	2.25	2.70	2.45	2.05	1.95	1.65	1.35	1.10	1.00	.90
22	2.20	2.60	2.15	1.95	1.55	1.55	1.30	2.10	1.00	1.50
23	2.15	2.50	4.50	1.90	1.90	1.50	1.30	2.00	1.00	3.20
24	2.00	2.45	3.50	4.70	1.90	2.15	1.30	3.50	1.00	1.55
25	2.00	2.35	3.00	3.40	1.85	1.50	1.30	3.00	.95	1.40
26	2.00	2.45	2.90	3.40	2.30	1.45	1.35	2.20	1.00	1.40
27	2.00	2.40	2.60	3.00	2.00	1.40	1.20	1.80	1.00	1.20
28	1.95	2.35	2.50	2.70	1.90	1.40	1.40	1.75	1.30	2.50
29	1.90	2.20	2.40	2.60	1.90	1.40	1.30	1.70	1.00	2.40
30	1.90		2.40	2.60	1.85	1.40	1.30	1.50	1.00	2.40
31	1.90		2.30		1.90		1.20	1.40		2.40

\*No reading.

RATING TABLE FOR CULLASAJA RIVER AT CULLASAJA, N. C., FOR 1907 AND 1908.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
0.80	65	1.15	108	1.50	159	1.85	219
.85	70	1.20	115	1.55	167	1.90	228
.90	76	1.25	122	1.60	175	1.95	238
.95	82	1.30	129	1.65	183	2.00	248
1.00	88	1.35	136	1.70	192		
1.05	94	1.40	144	1.75	201		
1.10	101	1.45	151	1.80	210		

## FRENCH BROAD RIVER AT OLDTOWN, TENN.

This was originally one of the temporary stations established in connection with the general hydrographic study of the southern Appalachian region.

The channel is straight for about 600 feet above and below the station. The velocity is moderately swift, and is considerably obstructed by old piling and logs. Both banks are high and wooded, and all water passes beneath the bridge at all stages. The bed is of gravel and sand.

Discharge measurements are made from the downstream side of the steel highway bridge of four spans. The initial point for soundings is the end of the guard rail at the left end of the bridge, on the downstream side.

The original gage put in at this station was carried away with the old bridge by flood early in the spring of 1902. A wire gage was established on the new bridge October 27, 1902, by B. S. Drane. The wire gage was replaced April 29, 1903, by a standard chain gage at the same datum. The length of the chain is 28.00 feet. The gage is referred to bench marks as follows: (1) A point marked in white paint on the sharp rectangular corner of the angle-iron connection between the floor beam and the first post on the downstream side in the second span from the left end of the bridge; elevation, 25.84 feet. (2) The top of a copper bolt set in a bowlder projecting from the hillside on the left bank 175 feet downstream from the center line of the bridge, 8 feet from the center of the road, and about 4 feet above ground. This rock is the first smooth-faced ledge of limestone outcropping close to the road. The face next the road is nearly vertical for a length of 4 feet. Elevation of bench mark, 29.52 feet. Elevations refer to the datum of the gage. The station was abandoned December 31, 1905.

## DISCHARGE MEASUREMENTS OF FRENCH BROAD RIVER AT OLDTOWN, NEAR NEWPORT, TENN.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1903.						
Feb. 12	E. W. Myers.....	---	2,814	----	4.32	12,874
Mar. 17	....do.....	---	2,374	----	2.87	5,059
Apr. 2	B. S. Drane.....	---	2,752	----	4.11	10,660
Apr. 30	E. C. Murphy.....	---	---	----	2.58	4,611
June 30	B. S. Drane.....	---	1,958	----	2.25	3,532
June 30	....do.....	---	1,978	----	2.24	3,268
Aug. 12	....do.....	---	1,703	----	1.80	2,279
Aug. 12	M. R. Hall.....	---	1,708	----	1.82	2,246
Sept. 2	B. S. Drane.....	---	1,615	----	1.45	1,167
Oct. 14	....do.....	---	1,545	----	1.31	986
Oct. 14	....do.....	---	1,541	----	1.31	992
1904.						
Feb. 23	B. S. Drane.....	453	2,155	2.50	2.92	5,568
Feb. 23	....do.....	453	2,136	2.51	2.87	5,358
Mar. 29	....do.....	450	1,928	1.97	2.34	3,904
Apr. 27	M. R. Hall.....	448	1,925	1.57	2.12	3,025
July 8	J. M. Giles.....	334	1,371	.76	1.30	1,045
Aug. 20	B. S. Drane.....	463	1,492	.92	1.50	1,390
Oct. 15	....do.....	442	1,267	.40	.98	508
1905.						
Feb. 9	B. S. Drane.....	395	2,028	2.25	2.50	4,564
May 11	W. E. Hall.....	379	2,059	2.05	2.54	4,208
June 20	B. S. Drane.....	396	2,125	2.14	2.70	4,547
Aug. 21	W. E. Hall.....	361	1,964	1.53	2.13	3,007
Dec. 19	F. A. Murray.....	375	1,894	1.38	1.95	2,627
Dec. 26	....do.....	377	2,002	1.70	2.19	3,399

DAILY GAGE HEIGHT, IN FEET, OF FRENCH BROAD RIVER AT OLDTOWN, NEAR NEWPORT, TENN.,  
FOR 1902.

Day.	Nov.	Dec.	Day.	Nov.	Dec.	Day.	Nov.	Dec.
1.....	1.40	2.10	12.....	1.40	1.90	23.....	1.60	2.50
2.....	1.40	2.20	13.....	1.50	1.90	24.....	1.60	2.60
3.....	1.40	2.30	14.....	1.40	1.90	25.....	2.00	2.40
4.....	1.40	3.20	15.....	1.40	1.90	26.....	2.20	2.20
5.....	1.40	2.80	16.....	1.50	2.00	27.....	2.10	2.00
6.....	1.60	2.60	17.....	1.60	3.00	28.....	1.90	2.10
7.....	1.80	2.40	18.....	1.60	2.90	29.....	1.90	2.00
8.....	2.00	2.30	19.....	1.90	2.30	30.....	2.00	1.90
9.....	1.20	2.20	20.....	1.80	2.20	31.....	-----	2.00
10.....	1.30	2.10	21.....	1.70	2.10			
11.....	1.30	2.00	22.....	1.60	2.20			

DAILY GAGE HEIGHT, IN FEET, OF FRENCH BROAD RIVER AT OLDTOWN, NEAR NEWPORT, TENN. FOR 903 AND 1904.

1903.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	2.10	2.00	5.50	4.80	2.50	2.40	2.20	2.00	1.50	1.20	1.20	1.20
2.....	2.20	1.90	4.40	4.00	2.50	3.30	2.10	2.00	1.50	1.20	1.20	1.30
3.....	2.40	2.00	3.90	3.60	2.40	3.20	2.00	2.10	1.40	1.20	1.20	1.30
4.....	2.50	3.80	3.20	4.30	2.80	2.80	2.20	2.00	1.40	1.20	1.50	1.30
5.....	2.50	3.70	3.00	3.70	2.60	2.50	2.00	2.10	1.50	1.20	1.60	1.30
6.....	2.40	3.00	3.50	3.40	2.50	4.50	2.40	2.00	1.50	1.30	1.70	1.30
7.....	2.30	2.70	3.80	3.20	2.40	4.70	2.30	1.90	1.40	1.30	1.60	1.30
8.....	2.20	4.60	3.80	12.00	2.30	4.60	2.20	1.80	1.40	1.40	1.50	1.20
9.....	2.10	4.00	4.80	5.90	2.30	4.20	2.10	1.60	1.40	1.50	1.40	1.20
10.....	2.00	3.30	4.00	4.60	2.30	4.00	2.00	1.70	1.30	1.60	1.30	1.20
11.....	1.90	3.20	4.20	3.80	2.30	4.10	2.10	1.90	1.40	1.50	1.30	1.20
12.....	2.10	4.40	4.60	3.40	2.20	3.70	2.40	1.80	1.30	1.40	1.30	1.20
13.....	2.40	3.80	4.50	4.40	2.20	3.20	2.70	1.70	1.30	1.40	1.30	1.20
14.....	2.20	3.20	3.80	5.80	2.20	2.80	2.60	1.60	1.30	1.30	1.30	1.30
15.....	2.20	2.90	3.20	5.20	2.10	2.60	2.20	1.70	1.40	1.30	1.30	1.30
16.....	2.20	3.90	3.00	4.70	2.10	2.50	2.00	1.80	1.40	1.30	1.20	1.30
17.....	2.10	6.50	2.90	4.20	2.10	2.40	2.20	1.90	1.50	1.40	1.50	1.20
18.....	2.00	4.70	2.80	3.80	2.10	2.30	2.00	2.00	1.50	1.40	2.10	1.20
19.....	2.00	3.60	2.70	3.50	2.10	2.30	1.90	1.90	1.50	1.40	1.80	1.20
20.....	1.90	3.10	2.60	3.40	2.00	2.30	1.90	1.80	1.40	1.30	1.60	1.20
21.....	2.00	3.00	2.70	3.50	2.00	2.40	1.80	1.70	1.40	1.30	1.50	1.50
22.....	2.10	2.80	3.30	3.30	2.10	2.20	1.80	1.70	1.30	1.30	1.50	1.70
23.....	2.00	2.70	11.80	3.40	2.00	2.50	1.80	1.60	1.30	1.20	1.50	1.50
24.....	1.90	2.60	7.50	3.10	2.00	2.30	1.70	1.60	1.30	1.20	1.40	1.40
25.....	1.90	2.50	6.40	3.00	2.00	2.10	1.70	1.60	1.30	1.20	1.40	1.50
26.....	1.90	2.40	4.90	2.90	1.90	2.20	1.70	1.50	1.30	1.20	1.30	1.60
27.....	2.00	2.30	3.90	2.80	1.90	2.30	1.60	1.50	1.20	1.30	1.30	1.50
28.....	1.90	6.50	3.40	2.70	2.00	2.50	1.60	1.50	1.30	1.30	1.30	1.50
29.....	2.00		3.20	2.60	2.10	2.40	1.60	1.40	1.30	1.20	1.20	1.40
30.....	2.10		5.60	2.60	2.40	2.30	1.90	1.70	1.20	1.20	1.20	1.40
31.....	2.00		5.30		2.90		1.80	1.60		1.20		1.40
1904.												
1.....	1.30	1.50	1.90	2.00	2.00	2.30	1.95	1.40	1.45	1.10	0.95	1.25
2.....	1.30	1.50	2.00	1.90	1.80	2.40	1.70	1.70	1.40	1.10	1.00	1.20
3.....	1.30	1.40	1.90	1.80	2.00	2.00	1.60	1.60	1.80	1.05	1.05	1.30
4.....	1.30	1.50	1.90	1.80	1.85	1.80	1.50	1.50	1.90	1.00	1.10	1.35
5.....	1.20	1.50	1.90	1.75	1.90	1.70	1.40	1.65	1.80	1.00	1.50	1.45
6.....	1.20	1.40	2.00	1.70	1.80	1.60	1.45	1.60	1.70	1.00	1.70	1.95
7.....	1.20	1.60	2.90	1.75	1.85	1.70	1.40	1.70	1.45	1.00	1.40	2.10
8.....	1.30	2.10	4.50	1.90	2.00	1.90	1.30	1.80	1.40	1.00	1.30	1.70
9.....	1.40	2.10	3.70	2.00	3.35	1.85	1.70	1.80	1.35	1.00	1.20	1.50
10.....	1.30	1.80	2.70	2.00	2.80	1.65	1.60	1.85	1.40	1.00	1.10	1.50
11.....	1.30	1.70	2.55	2.00	2.40	1.70	1.50	1.90	1.35	.95	1.00	1.50
12.....	1.40	1.60	2.30	1.90	2.20	1.65	1.40	2.00	1.40	1.00	1.10	1.45
13.....	1.70	1.50	2.15	1.90	2.00	1.60	1.30	1.90	1.40	1.00	1.20	1.40
14.....	1.60	1.40	2.10	1.80	1.95	1.50	1.30	1.70	1.35	.95	1.45	1.35
15.....	1.60	1.60	2.20	1.80	1.90	1.45	1.20	1.60	1.30	1.00	1.45	1.35
16.....	1.50	1.50	2.00	1.80	1.80	1.45	1.15	1.70	1.25	.95	1.40	1.30
17.....	2.00	1.50	1.90	1.80	1.75	1.40	1.15	1.55	1.20	.95	1.35	1.30
18.....	2.10	1.50	1.90	1.80	1.70	1.40	1.15	1.55	1.20	.90	1.30	1.35
19.....	2.10	1.40	1.95	1.70	1.70	1.85	1.20	1.50	1.15	.95	1.30	1.30
20.....	1.90	1.50	1.90	1.70	1.70	1.75	1.20	1.50	1.20	.95	1.25	1.25
21.....	1.90	1.60	2.00	1.75	1.65	1.70	1.40	1.50	1.15	1.00	1.25	1.30
22.....	2.00	1.80	2.20	1.80	1.60	1.75	1.30	1.50	1.20	.95	1.25	1.20
23.....	2.10	2.90	4.20	1.70	1.55	1.65	1.40	1.55	1.15	1.05	1.40	1.25
24.....	2.50	2.30	3.70	1.75	1.60	1.55	1.55	1.95	1.15	.95	1.30	1.30
25.....	1.90	2.00	3.10	1.70	1.65	1.45	1.85	1.70	1.15	1.00	1.25	1.35
26.....	1.80	1.90	2.80	1.75	1.60	1.50	1.50	1.75	1.10	1.00	1.25	1.35
27.....	1.60	2.20	2.75	2.15	1.60	1.60	1.50	1.70	1.20	1.00	1.10	1.40
28.....	1.60	2.20	2.60	2.30	1.55	1.70	1.45	2.00	1.10	.95	1.00	1.60
29.....	1.50	2.00	2.30	2.20	1.50	1.90	1.40	1.95	1.15	1.00	1.10	2.25
30.....	1.40		2.20	2.10	1.50	1.90	1.30	1.60	1.15	1.00	1.20	1.80
31.....	1.70		2.10		1.80		1.30	1.50		1.00		1.60

DAILY GAGE HEIGHT, IN FEET, OF FRENCH BROAD RIVER AT OLDTOWN, NEAR NEWPORT, TENN., FOR 1905.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	1.55	2.00	2.25	1.65	1.90	2.05	2.15	1.95	1.90	1.35	1.40	1.35
2.....	1.50	1.65	2.15	1.65	1.90	1.95	2.00	1.90	1.90	1.35	1.35	1.35
3.....	1.60	1.90	2.16	1.60	1.70	1.85	2.75	1.90	2.20	1.40	1.30	4.10
4.....	1.60	1.55	2.05	1.60	1.70	1.75	2.25	1.90	2.00	1.30	1.30	3.30
5.....	1.40	1.50	2.00	1.70	2.60	1.75	2.20	1.95	1.90	1.60	1.30	2.40
6.....	1.75	1.55	1.95	2.10	2.55	1.90	2.65	1.90	1.90	1.50	1.35	1.90
7.....	2.20	1.65	1.90	2.20	3.20	1.70	2.40	1.85	1.75	1.50	1.40	1.90
8.....	2.25	1.90	1.95	2.00	3.90	1.70	2.05	2.25	1.70	1.40	1.35	1.70
9.....	1.90	2.50	2.00	1.95	2.90	1.70	2.10	3.00	1.65	1.35	1.30	2.70
10.....	1.90	2.90	2.25	2.25	2.45	1.60	2.40	2.75	1.65	1.40	1.30	3.90
11.....	1.70	2.55	2.65	2.10	2.50	1.60	2.50	3.60	1.65	1.50	1.35	3.00
12.....	2.40	2.20	2.40	2.55	2.20	1.65	9.30	4.60	1.60	2.55	1.30	2.35
13.....	4.90	2.50	2.30	2.60	2.75	1.90	7.60	4.20	1.60	1.95	1.25	2.10
14.....	4.10	3.00	2.20	2.40	2.55	1.65	6.00	3.70	1.60	1.65	1.30	1.95
15.....	2.65	2.50	2.10	2.20	2.40	1.55	5.10	3.10	1.55	1.50	1.30	1.90
16.....	2.15	2.10	2.00	2.00	4.00	1.60	4.10	2.70	1.55	1.50	1.30	2.25
17.....	2.00	2.05	1.95	1.95	3.90	3.60	3.10	2.60	1.55	1.50	1.25	2.10
18.....	1.95	2.00	1.85	1.90	2.55	3.40	2.90	2.40	1.50	1.45	1.25	2.00
19.....	1.90	1.90	1.90	1.90	2.40	3.20	2.40	2.30	1.50	1.40	1.30	1.90
20.....	1.90	2.10	1.85	1.75	2.20	2.75	2.90	2.40	1.60	1.55	1.25	1.90
21.....	1.70	4.40	1.90	1.75	2.05	2.50	2.55	2.10	1.60	1.50	1.30	2.30
22.....	1.70	4.30	2.10	1.75	2.15	2.50	2.70	2.10	1.60	1.50	1.35	2.90
23.....	1.65	3.90	1.95	1.70	2.70	2.35	2.65	2.20	1.50	1.40	1.30	2.60
24.....	1.60	3.30	1.90	4.60	2.50	2.30	2.40	2.30	1.50	1.40	1.30	2.60
25.....	1.60	2.65	1.85	1.60	2.35	2.00	2.30	2.60	1.45	1.40	1.30	2.35
26.....	1.50	2.65	1.85	1.65	2.15	1.90	2.20	2.45	1.40	1.50	1.25	2.15
27.....	1.40	2.50	1.60	1.75	2.25	2.40	2.10	2.30	1.40	1.55	1.25	2.00
28.....	1.30	2.40	1.75	1.90	3.10	2.10	2.20	2.10	1.35	1.55	1.30	1.95
29.....	1.20	.....	1.70	1.85	3.00	1.90	2.40	2.00	1.40	1.50	1.35	2.00
30.....	1.15	.....	1.70	1.95	2.40	1.95	2.70	1.90	1.35	1.45	1.40	2.20
31.....	1.50	.....	1.70	.....	2.25	.....	2.20	1.90	.....	1.40	.....	2.00

RATING TABLE FOR FRENCH BROAD RIVER AT OLDTOWN, NEAR NEWPORT, TENN., FOR 1903.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.2	735	2.9	5,440	4.6	14,050	6.3	25,100
1.3	965	3.0	5,820	4.7	14,700	6.4	25,750
1.4	1,200	3.1	6,220	4.8	15,350	6.5	26,400
1.5	1,440	3.2	6,630	4.9	16,000	6.6	27,050
1.6	1,685	3.3	7,060	5.0	16,650	6.7	27,700
1.7	1,935	3.4	7,510	5.1	17,300	6.8	28,350
1.8	2,190	3.5	7,980	5.2	17,950	6.9	29,000
1.9	2,450	3.6	8,460	5.3	18,600	7.0	29,650
2.0	2,715	3.7	8,950	5.4	19,250	7.5	32,900
2.1	2,985	3.8	9,460	5.5	19,900	8.0	36,150
2.2	3,265	3.9	9,980	5.6	20,550	9.0	42,650
2.3	3,545	4.0	10,520	5.7	21,200	10.0	49,150
2.4	3,830	4.1	11,070	5.8	21,850	11.0	55,650
2.5	4,120	4.2	11,640	5.9	22,500	12.0	62,150
2.6	4,420	4.3	12,220	6.0	23,150		
2.7	4,740	4.4	12,810	6.1	23,800		
2.8	5,090	4.5	13,420	6.2	24,450		

RATING TABLE FOR FRENCH BROAD RIVER AT OLDTOWN, NEAR NEWPORT, TENN., FOR 1904 AND 1905.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
0.90	400	1.90	2,410	2.80	5,140	3.70	8,805
1.00	535	2.00	2,680	2.90	5,500	3.80	9,245
1.10	685	2.10	2,955	3.00	5,875	3.90	9,690
1.20	850	2.20	3,235	3.10	6,260	4.00	10,140
1.30	1,030	2.30	3,525	3.20	6,660	4.20	11,050
1.40	1,225	2.40	3,825	3.30	7,075	4.40	11,980
1.50	1,435	2.50	4,135	3.40	7,500	4.60	12,920
1.60	1,660	2.60	4,455	3.50	7,930	4.80	13,860
1.70	1,900	2.70	4,790	3.60	8,365	5.00	14,800
1.80	2,150						

NOTE.—The above table is based on thirteen discharge measurements made during 1904-1905 and one measurement made in 1903, to determine the upper part of the curve. It is well defined between gage heights 1 foot and 3 feet.

ESTIMATED MONTHLY DISCHARGE OF FRENCH BROAD RIVER AT OLDTOWN, NEAR NEWPORT, TENN.

[Drainage area, 1,737 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maximum.	Minimum.	Mean.	Second-feet per Square Mile.	Depth in Inches.
1903.					
January.....	4,120	2,450	3,030	1.74	2.01
February.....	26,400	2,450	8,327	4.79	4.99
March.....	60,850	4,420	12,877	7.41	8.54
April.....	62,150	4,420	11,597	6.68	7.45
May.....	5,440	2,450	3,382	1.95	2.25
June.....	14,700	2,985	6,061	3.49	3.89
July.....	4,740	1,685	2,790	1.60	1.84
August.....	2,985	1,200	2,108	1.21	1.39
September.....	1,440	735	1,139	.66	.74
October.....	1,685	735	975	.56	.65
November.....	2,985	735	1,250	.72	.80
December.....	1,935	735	1,045	.60	.69
The year.....	62,150	735	4,548	2.62	35.24
1904.					
January.....	4,135	850	1,758	1.01	1.16
February.....	5,500	1,225	2,063	1.19	1.28
March.....	12,450	2,410	4,271	2.46	2.84
April.....	3,525	1,900	2,333	1.34	1.50
May.....	7,288	1,435	2,407	1.39	1.60
June.....	3,825	1,225	1,957	1.13	1.26
July.....	2,545	768	1,290	.748	.862
August.....	2,680	1,225	1,877	1.08	1.24
September.....	2,410	685	1,125	.648	.723
October.....	685	400	526	.303	.349
November.....	1,900	468	943	.543	.606
December.....	3,380	850	1,375	.792	.913
The year.....	12,450	400	1,828	1.05	14.33



ESTIMATED MONTHLY DISCHARGE OF FRENCH BROAD RIVER AT OLDTOWN, NEAR NEWPORT,  
TENN.—Continued.

[Drainage area, 1,737 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maxi- mum.	Mini- mum.	Mean.	Second- feet per Square Mile.	Depth in Inches.
1905.					
January .....	13,860	768	2,703	1.56	1.90
February .....	11,990	1,435	4,188	2.41	2.51
March .....	4,622	1,900	2,688	1.55	1.79
April .....	5,320	1,660	2,508	1.44	1.61
May .....	10,140	2,025	4,493	2.59	2.99
June .....	8,365	1,548	3,051	1.76	1.96
July .....	36,300	2,818	6,942	4.00	4.61
August .....	12,920	2,150	4,319	2.49	2.87
September .....	3,235	1,128	1,730	.996	1.11
October .....	4,295	1,128	1,502	.865	.997
November .....	1,225	940	1,051	.605	.675
December .....	10,590	1,128	3,679	2.12	2.44
The year .....	36,300	768	3,238	1.86	25.36

FRENCH BROAD RIVER AT BINGHAM SCHOOL BRIDGE, NEAR ASHEVILLE, N. C.

This station was established in September, 1895, by C. C. Babb. It is located at Bingham School Bridge crossing French Broad River at Riverside Park, about 3 miles west of Asheville, N. C. It was maintained as a regular station from 1895 to the close of 1901. Discharge measurements are made from the upstream side of the three-span bridge. The channel is straight for about 700 feet above and below the station. The current is swift. Both banks are high, wooded, and not liable to overflow. The bed of the stream is composed of bowlders, very rough, and permanent. There is but one channel at all stages, broken by two piers at ordinary stages and four piers at high stages. Bench mark No. 1 is the upper edge of the steel plate riveted to the bridge post, over the second floor beam, from the right bank, on the upstream side of the bridge. Its elevation is 20 feet above gage datum.

## DISCHARGE MEASUREMENTS OF FRENCH BROAD RIVER AT BINGHAM SCHOOL BRIDGE, ASHEVILLE, N. C.

Date.	Hydrographer.	Meter Number.	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second-feet).
1895.						
Sept. 2	C. C. Babb	29	650	1.84	4.30	1,192
Sept. 17	do.	29	585	1.72	3.22	1,006
1896.						
Apr. 18	E. W. Myers	21	538	1.22	2.90	650
June 19	do.	21	685	2.18	3.42	1,495
Aug. 16	do.	2154	543	2.00	3.25	1,069
Sept. 19	do.	2154	438	1.58	2.50	694
1897.						
Aug. 18	E. W. Myers	2154	531	1.65	2.86	882
Oct. 14	do.	2154	469	1.72	2.84	808
Oct. 27	A. P. Davis	94	434	1.69	2.50	734
1898.						
Jan. 18	E. W. Myers	2154	502	1.82	2.75	918
Sept. 8	do.	9	1,089	3.06	5.45	3,332

Date.	Hydrographer.	Gage Height (Feet).	Discharge (Second-feet).
1899.			
Feb. 25		4.30	2,810
June 16		3.03	2,359
Sept. 30		1.94	714
Oct. 27		1.95	815
Nov. 30		2.12	1,043
1900.			
Jan. 6		2.52	1,368
Feb. 13		7.95	16,967
Mar. 17		4.20	4,982
Apr. 22		6.80	13,069
June 6		3.30	2,848
June 15		3.60	2,258
July 4		3.75	4,273
July 6		4.05	3,112
Aug. 11		3.10	1,294
Sept. 6		3.00	1,002
Sept. 13		2.82	710
Sept. 19		3.24	1,452
Oct. 13		3.00	997
Oct. 23		8.20	16,575
Nov. 20		3.20	1,414
Dec. 14		3.50	1,638
Dec. 30		3.78	2,135

## DISCHARGE MEASUREMENTS OF FRENCH BROAD RIVER AT BINGHAM SCHOOL BRIDGE, ASHEVILLE, N. C.—Continued.

Date.	Hydrographer.	Gage Height (Feet).	Discharge (Second-feet).
1901.			
Feb. 28	R. E. Shuford.....	3.60	2,955
Mar. 27	do.....	8.97	19,377
Apr. 16	E. W. Myers.....	4.68	3,308
May 21	R. E. Shuford.....	12.10	31,100
July 4	do.....	4.06	2,942
July 31	E. W. Myers.....	3.60	1,760
Aug. 6	R. E. Shuford.....	9.50	20,240
Aug. 15	do.....	9.30	18,528
Sept. 18	E. W. Myers.....	6.90	8,760
Oct. 14	do.....	4.33	2,950
Nov. 10	R. E. Shuford.....	3.30	1,857
Dec. 10	do.....	3.45	1,996

## DAILY GAGE HEIGHT, IN FEET, OF FRENCH BROAD RIVER AT BINGHAM SCHOOL BRIDGE, ASHEVILLE, N. C., FOR 1905.

Day.	Sept.	Oct.	Nov.	Dec.	Day.	Sept.	Oct.	Nov.	Dec.
1.....		2.60	3.30	2.70	17.....	3.20	2.55	2.67	2.60
2.....		2.60	2.80	2.70	18.....	3.00	2.55	2.65	2.60
3.....		2.60	2.65	2.70	19.....	2.85	2.55	2.60	2.70
4.....		2.60	2.60	2.75	20.....	2.85	2.52	2.65	3.00
5.....		2.60	2.62	2.75	21.....	2.80	2.50	2.65	3.40
6.....		2.60	2.62	2.63	22.....	2.80	2.50	2.60	4.40
7.....		2.60	2.60	2.60	23.....	2.70	2.50	2.60	3.56
8.....		2.60	3.28	2.65	24.....	2.72	2.50	2.60	3.40
9.....		2.60	2.98	2.65	25.....	2.75	2.50	2.60	3.15
10.....		2.60	2.70	2.75	26.....	2.70	2.52	2.75	3.20
11.....		2.55	3.30	2.75	27.....	2.63	2.50	3.25	4.50
12.....		2.63	3.02	2.67	28.....	2.60	2.58	2.85	3.85
13.....		2.55	2.80	2.67	29.....	2.60	2.55	2.85	3.55
14.....		2.55	2.75	2.65	30.....	2.60	2.58	2.70	3.70
15.....		2.55	2.73	2.60	31.....	2.70			4.30
16.....		2.55	2.70	2.60					

DAILY GAGE HEIGHT, IN FEET, OF FRENCH BROAD RIVER AT BINGHAM SCHOOL BRIDGE, ASHEVILLE, N. C., FOR 1896 AND 1897.

1896.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	3.80	3.40	-----	3.80	2.80	2.90	2.56	3.20	2.50	2.65	2.75	5.80
2.....	3.40	3.40	-----	4.20	3.20	2.90	2.55	3.10	2.63	2.63	2.65	4.50
3.....	3.30	4.00	-----	3.70	4.60	2.90	2.65	3.25	2.70	2.60	2.65	4.10
4.....	3.20	3.70	-----	3.45	4.10	3.13	2.85	3.10	2.73	2.50	2.85	3.80
5.....	3.20	3.60	-----	3.30	3.90	2.90	2.86	2.90	2.95	2.45	6.10	3.80
6.....	3.30	4.65	-----	3.27	3.70	2.90	4.10	2.85	3.20	2.43	5.50	3.60
7.....	3.15	4.60	-----	3.25	3.50	2.73	5.10	2.85	3.10	2.40	5.43	3.50
8.....	3.10	4.43	-----	3.20	3.26	2.70	9.85	2.90	2.90	2.40	3.45	3.40
9.....	3.00	5.45	-----	3.15	3.20	3.15	8.73	2.85	2.65	2.40	3.35	3.40
10.....	2.75	4.70	-----	3.15	3.07	2.90	7.00	3.00	2.53	2.40	3.25	3.30
11.....	2.90	4.20	-----	3.02	3.05	2.75	6.10	3.00	2.55	2.40	2.75	3.25
12.....	2.90	3.95	-----	3.50	3.05	2.70	5.00	2.95	2.85	2.45	3.50	3.25
13.....	2.85	4.85	-----	3.25	3.03	2.67	4.80	2.80	2.55	2.50	4.25	3.20
14.....	2.85	4.45	-----	3.25	3.05	2.65	4.50	2.85	2.55	2.65	4.23	3.20
15.....	2.75	3.95	-----	3.15	2.87	2.60	4.30	2.95	2.57	2.55	4.20	3.25
16.....	2.80	3.80	3.50	3.10	2.80	2.60	4.25	3.25	2.57	2.45	3.85	3.30
17.....	2.80	3.70	3.40	2.95	2.76	3.15	4.15	2.95	2.65	2.43	3.75	3.30
18.....	3.40	3.60	3.40	2.90	2.76	3.30	4.03	2.80	2.53	2.40	3.63	3.25
19.....	3.20	3.50	3.16	2.93	2.70	3.39	3.80	2.78	2.50	2.43	3.50	3.10
20.....	3.15	3.40	3.70	2.93	2.70	3.18	3.75	2.80	2.40	2.46	2.95	3.10
21.....	3.15	3.40	3.30	2.93	2.70	2.95	3.70	2.80	2.40	2.45	2.93	3.05
22.....	3.10	3.30	3.20	2.95	2.90	3.00	3.65	2.65	2.37	2.42	2.90	3.05
23.....	5.30	3.35	3.20	2.95	3.05	3.14	3.63	2.75	2.50	2.45	2.70	3.14
24.....	6.50	3.35	3.30	2.95	3.10	3.15	3.60	2.70	2.50	2.45	2.85	3.00
25.....	5.80	3.30	3.20	2.92	3.00	3.15	3.55	2.70	2.45	2.45	2.80	2.95
26.....	4.40	3.35	3.15	2.86	2.70	2.93	3.35	2.70	2.45	2.45	2.90	2.90
27.....	3.95	3.25	3.10	2.82	3.05	2.80	3.40	2.60	2.35	2.45	3.10	2.90
28.....	3.75	3.35	3.10	2.82	2.75	3.05	3.50	2.60	3.00	2.47	4.05	2.87
29.....	3.60	3.30	3.50	2.82	2.75	2.75	3.40	2.50	2.70	2.50	4.95	2.85
30.....	3.40	-----	3.25	2.80	2.73	2.63	3.35	2.50	2.67	2.50	6.20	2.83
31.....	3.40	-----	3.30	-----	2.70	-----	3.25	2.50	-----	2.45	-----	2.83
1897.												
1.....	2.80	3.60	3.90	4.25	7.10	3.30	3.30	2.75	2.65	2.30	2.90	2.85
2.....	2.75	3.80	3.80	4.20	7.00	3.25	3.15	2.80	2.63	2.30	3.85	2.85
3.....	2.70	4.60	3.80	4.15	3.90	3.90	3.05	2.85	2.60	2.30	3.83	2.90
4.....	2.90	4.90	3.80	5.30	5.70	3.95	3.10	2.95	2.60	2.27	3.77	3.00
5.....	3.25	4.90	3.70	7.60	4.50	3.85	3.15	2.95	2.60	2.27	2.95	3.00
6.....	3.25	7.90	7.00	7.30	4.30	3.40	3.25	3.10	2.55	2.25	2.85	2.90
7.....	2.95	7.40	7.25	6.90	4.00	3.30	3.35	4.00	2.55	2.25	2.65	2.83
8.....	2.93	6.40	5.50	6.50	3.90	4.50	3.37	4.00	2.53	2.23	2.55	2.77
9.....	2.93	4.85	5.00	5.40	3.85	3.80	3.37	3.05	2.45	2.23	2.53	2.65
10.....	2.87	4.55	5.10	5.35	3.80	3.65	3.25	3.03	2.40	2.23	2.50	2.63
11.....	2.85	4.60	5.20	4.60	3.60	3.40	3.60	3.00	2.37	3.35	2.47	2.60
12.....	2.85	4.70	6.20	4.55	3.45	3.30	3.40	2.80	2.37	3.30	2.46	2.60
13.....	2.87	4.60	6.43	4.40	4.00	3.20	3.20	2.73	2.35	3.20	2.45	2.55
14.....	2.90	4.55	7.00	4.60	4.15	3.15	3.25	2.70	2.35	2.83	2.45	2.45
15.....	2.85	4.35	5.90	4.60	4.00	3.05	3.30	2.70	2.40	2.75	2.45	2.45
16.....	2.83	4.15	6.40	4.50	3.70	3.30	3.30	2.80	2.40	2.65	2.45	3.15
17.....	2.95	3.95	5.90	4.35	3.65	3.40	3.40	2.85	2.35	2.63	2.43	3.15
18.....	3.35	3.90	5.30	4.15	3.65	3.55	3.35	2.87	2.33	2.45	2.43	3.10
19.....	3.15	3.85	5.45	4.10	3.55	3.60	3.35	2.85	2.37	3.25	2.40	2.95
20.....	3.50	3.75	5.85	4.05	3.53	3.35	3.25	2.92	2.35	3.23	2.37	3.00
21.....	4.45	4.15	5.50	4.00	3.50	3.35	3.40	2.90	2.33	2.85	2.27	3.15
22.....	4.40	3.90	4.90	3.90	3.50	3.25	3.55	2.90	2.40	2.75	2.35	3.20
23.....	3.65	6.85	4.75	3.85	3.50	3.40	3.40	2.85	2.50	2.67	2.33	3.25
24.....	3.55	6.05	4.65	3.85	3.50	3.55	3.35	2.83	2.45	2.65	2.35	3.20
25.....	3.45	4.86	4.55	3.75	3.45	3.40	3.30	2.70	2.43	2.63	2.40	3.05
26.....	3.35	4.35	4.45	3.70	3.35	3.35	3.15	2.70	2.43	2.50	2.60	3.25
27.....	3.35	4.20	4.45	3.70	3.37	3.30	3.20	2.70	2.40	2.50	2.90	3.40
28.....	3.45	4.15	4.35	3.67	3.27	3.50	3.10	2.65	2.37	2.47	2.85	3.65
29.....	3.43	-----	4.10	3.65	3.25	3.65	3.05	2.50	2.35	2.45	2.83	3.57
30.....	3.33	-----	4.00	5.40	3.35	3.45	3.00	2.55	2.33	2.45	2.90	3.50
31.....	3.45	-----	4.10	-----	3.35	-----	2.75	2.57	-----	2.45	-----	3.40

DAILY GAGE HEIGHT, IN FEET, OF FRENCH BROAD RIVER AT BINGHAM SCHOOL BRIDGE, ASHEVILLE, N. C. FOR 1898 AND 1899.

1898.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	3.25	3.52	2.77	4.60	3.30	2.70	2.55	3.70	3.60	3.45	3.50	3.60
2.....	3.25	3.47	2.75	4.05	3.30	2.67	2.35	3.90	3.50	3.33	3.60	3.55
3.....	3.15	3.45	2.73	4.05	3.27	2.63	2.65	4.10	3.45	5.25	3.50	3.30
4.....	3.03	3.35	2.70	4.10	3.25	2.63	2.63	8.55	6.33	8.10	3.43	3.25
5.....	2.87	3.15	2.70	4.20	3.17	2.60	2.60	7.23	6.00	7.60	3.40	3.30
6.....	2.93	3.10	2.70	4.23	3.10	2.60	2.60	6.40	5.75	6.75	3.35	3.35
7.....	2.90	3.05	2.65	4.10	3.03	2.55	2.55	5.77	5.90	7.03	3.03	3.40
8.....	2.90	3.00	2.63	3.30	3.03	2.55	2.55	5.60	5.00	6.05	3.25	3.35
9.....	2.80	3.00	2.63	3.40	3.00	2.55	2.55	5.00	4.65	6.00	3.02	3.25
10.....	2.80	2.90	2.60	3.40	3.00	2.53	3.40	4.40	4.30	5.60	3.15	3.20
11.....	2.90	2.85	2.60	3.40	2.90	2.50	2.85	6.60	4.25	5.40	3.01	3.15
12.....	3.00	2.80	2.60	3.37	4.00	2.50	2.80	7.20	3.95	4.70	3.01	3.13
13.....	3.00	2.85	2.63	3.25	4.00	2.60	4.95	6.95	3.90	3.80	3.10	3.10
14.....	2.93	2.77	2.60	3.27	3.40	2.65	7.00	6.50	3.80	3.80	3.50	3.00
15.....	2.90	2.73	2.60	3.25	3.30	2.70	6.65	6.00	3.75	3.80	3.10	2.97
16.....	2.85	2.75	2.90	3.25	3.05	2.90	6.50	5.00	3.65	3.60	3.15	2.95
17.....	2.85	2.75	2.75	3.23	3.00	3.00	6.50	4.40	3.57	3.80	3.20	2.90
18.....	2.77	3.00	2.73	3.20	2.95	3.35	6.00	4.40	3.55	6.30	3.30	2.93
19.....	3.20	3.15	2.70	3.17	2.95	4.50	5.00	4.40	3.50	6.20	3.20	3.10
20.....	3.30	3.10	2.70	3.15	2.93	4.50	3.85	4.37	3.45	6.10	3.20	3.25
21.....	4.20	3.07	2.85	2.97	2.90	4.00	4.10	4.35	3.40	6.10	3.25	3.30
22.....	4.30	3.05	2.85	2.95	2.90	3.90	5.30	4.30	3.40	7.00	3.27	4.80
23.....	4.30	2.95	2.83	3.95	3.10	3.55	5.20	4.23	7.30	6.50	3.23	5.50
24.....	4.40	2.90	2.80	3.90	3.05	2.70	4.90	4.15	6.60	5.00	3.30	5.00
25.....	4.50	2.80	2.77	3.90	2.90	2.55	4.50	4.03	5.70	4.10	3.25	4.90
26.....	5.30	2.80	2.73	4.27	2.80	2.50	4.20	4.00	4.90	4.00	3.25	4.50
27.....	4.00	2.83	2.71	4.25	2.70	2.60	4.00	3.90	3.85	4.00	3.20	4.00
28.....	3.75	2.80	2.70	4.20	2.75	3.20	3.80	3.80	3.80	3.35	3.30	5.50
29.....	3.65		5.00	3.70	2.75	3.25	3.70	3.73	3.70	3.30	3.40	5.20
30.....	3.60		6.00	3.30	2.75	3.12	3.60	3.70	3.50	3.33	3.53	5.10
31.....	3.55		5.70		2.73		3.53	3.70		3.30		4.70
1899.												
1.....	4.60	3.60	6.80	5.25	4.20	2.90	2.40	2.45	3.10	1.80	2.30	2.23
2.....	4.20	3.55	6.40	5.20	4.15	2.80	2.43	2.30	3.05	1.83	2.30	2.15
3.....	3.90	4.65	5.60	5.80	4.17	2.73	2.50	2.23	3.00	1.85	2.20	2.15
4.....	3.80	8.20	4.40	5.50	4.15	2.70	2.45	2.20	2.80	1.90	2.15	2.20
5.....	3.90	8.00	4.20	5.10	4.20	2.73	2.45	2.10	2.60	1.90	2.13	2.17
6.....	3.95	7.03	4.30	5.40	4.30	2.65	2.47	2.00	2.30	2.00	2.10	2.15
7.....	4.20	7.00	4.35	5.85	4.40	2.53	2.45	2.03	2.10	2.05	2.07	2.13
8.....	4.70	6.50	4.35	5.80	4.30	2.50	2.40	2.50	3.50	2.65	2.05	2.11
9.....	4.65	5.50	4.30	5.70	4.30	2.57	2.40	2.70	2.60	2.40	2.03	2.05
10.....	4.50	5.00	4.25	5.80	4.20	2.63	2.37	3.00	2.50	2.30	2.00	2.15
11.....	4.40	4.80	4.30	5.90	4.35	2.70	2.35	3.50	2.35	2.25	2.00	3.40
12.....	4.20	4.70	4.30	6.45	4.60	2.73	2.35	2.45	2.20	2.20	2.20	6.35
13.....	4.10	4.50	5.00	6.45	4.55	2.65	2.30	2.20	2.15	2.13	1.97	6.13
14.....	4.03	4.40	8.50	5.60	4.40	2.53	2.23	2.25	2.10	2.05	1.95	5.20
15.....	4.40	4.30	11.50	4.50	4.30	2.50	2.20	2.27	2.10	2.65	1.93	3.70
16.....	4.40	5.60	9.00	4.80	4.20	2.57	2.15	2.23	2.10	2.40	1.95	2.77
17.....	4.35	5.40	7.60	4.60	4.00	2.63	2.40	2.10	2.10	2.30	2.00	2.85
18.....	4.30	5.25	5.50	4.50	3.80	2.83	2.45	2.05	2.15	2.25	2.00	2.75
19.....	4.25	5.20	11.25	4.45	3.70	2.80	2.37	2.03	2.23	2.20	2.13	2.70
20.....	4.10	5.00	10.00	4.35	3.60	2.80	2.27	2.03	2.20	2.10	2.10	2.67
21.....	3.70	4.15	7.50	4.30	4.40	2.70	2.23	2.00	2.10	2.05	2.07	2.60
22.....	3.65	4.30	6.70	4.20	4.30	2.65	2.15	2.00	1.90	2.07	2.05	2.55
23.....	3.60	4.50	6.05	4.40	4.20	2.60	2.20	1.97	1.85	2.10	2.03	3.40
24.....	3.70	4.40	5.70	4.50	4.00	2.55	2.20	1.95	1.83	2.10	2.00	3.93
25.....	4.05	4.30	5.40	4.60	3.80	2.47	2.15	1.93	1.90	2.07	2.00	3.80
26.....	4.03	4.40	5.25	4.70	3.70	2.65	3.00	2.00	2.15	2.05	2.15	3.53
27.....	4.00	8.80	5.60	4.50	3.60	2.85	3.15	2.10	2.10	2.03	2.30	2.10
28.....	3.80	7.75	5.25	4.40	2.85	2.95	3.00	2.50	2.15	2.00	2.40	2.70
29.....	3.75		5.33	4.30	2.80	2.80	2.80	2.60	1.85	2.05	2.37	2.65
30.....	3.70		5.40	4.25	2.75	2.50	2.50	2.80	1.80	2.13	2.35	2.60
31.....	3.65		5.35		3.00		2.43	3.85		2.25		2.57

DAILY GAGE HEIGHT, IN FEET, OF FRENCH BROAD RIVER AT BINGHAM SCHOOL BRIDGE, ASHEVILLE, N. C., FOR 1900 AND 1901.

1900.	Jan.	Feb.	Mar.	Apr.	May	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	2.67	2.83	7.40	3.40	4.53	3.05	4.05	3.65	3.33	2.95	3.50	3.90
2.....	2.35	2.65	6.70	3.33	4.47	3.10	4.10	3.55	3.20	2.93	4.00	3.73
3.....	2.25	2.63	6.10	3.40	3.45	3.03	4.15	3.50	3.15	2.97	4.13	3.64
4.....	2.30	2.80	5.80	3.73	3.35	3.05	4.20	3.40	3.10	3.10	4.25	4.98
5.....	2.35	3.10	4.70	3.60	3.27	3.55	4.17	3.35	3.07	3.27	4.13	4.57
6.....	2.47	3.20	3.75	3.20	3.20	3.80	4.20	3.35	3.10	3.20	4.00	4.35
7.....	2.90	3.50	3.80	3.15	3.17	4.20	4.05	3.27	3.05	3.10	3.85	4.07
8.....	2.60	3.60	4.90	3.10	3.15	4.05	4.10	3.23	3.03	3.10	3.58	3.95
9.....	2.45	3.70	4.70	3.07	3.20	4.00	3.85	3.20	3.10	3.00	3.40	3.70
10.....	2.33	3.75	4.30	3.05	3.15	3.80	3.65	3.17	3.05	2.95	3.45	3.67
11.....	2.80	3.00	4.10	3.20	3.10	3.70	3.67	3.15	3.00	2.85	3.47	3.55
12.....	4.30	3.80	3.80	3.40	3.00	3.40	3.63	3.13	2.85	3.00	3.50	3.50
13.....	4.25	7.95	3.60	3.30	3.00	3.45	4.80	3.25	2.80	3.13	3.47	3.47
14.....	3.93	7.05	3.45	3.25	2.90	3.30	4.00	3.30	3.40	3.10	3.38	3.47
15.....	3.80	6.55	3.37	3.00	2.85	3.20	4.03	3.17	4.65	2.90	3.35	3.49
16.....	4.45	5.87	3.40	3.95	2.87	7.23	3.80	3.20	5.27	2.80	3.32	3.50
17.....	4.10	4.95	3.50	4.30	2.85	6.10	3.70	3.35	3.90	2.85	3.30	3.47
18.....	3.80	4.30	3.70	5.60	2.83	5.70	3.65	3.45	3.80	2.83	3.31	3.45
19.....	3.60	3.47	3.75	5.75	2.80	4.75	3.63	3.40	3.50	2.80	3.35	3.44
20.....	4.20	3.40	4.40	5.80	2.77	4.70	3.60	3.30	3.20	2.75	3.37	3.70
21.....	4.10	3.80	4.20	6.35	2.65	4.67	3.57	3.20	3.15	2.70	3.40	5.11
22.....	4.00	4.90	4.10	7.40	2.47	4.80	3.55	3.13	3.13	3.80	3.37	4.48
23.....	3.80	4.70	3.70	5.10	2.30	4.93	3.65	3.15	3.10	8.50	3.33	4.40
24.....	3.75	4.60	3.60	4.60	2.60	6.60	3.70	3.20	3.05	7.45	3.28	4.35
25.....	3.65	4.40	3.40	4.55	3.05	5.95	3.75	3.40	3.20	6.20	4.30	4.20
26.....	3.45	3.50	4.30	4.43	3.10	5.80	3.87	3.35	2.70	4.80	6.45	4.12
27.....	3.30	3.60	4.00	4.20	3.00	5.70	4.45	3.25	2.75	4.15	5.27	3.85
28.....	3.20	3.80	3.85	3.90	2.80	4.65	3.85	3.20	2.80	4.00	4.70	3.80
29.....	2.95		3.80	3.70	2.73	4.10	3.55	3.13	2.90	3.70	4.35	3.85
30.....	2.90		3.60	3.60	2.67	4.00	3.93	3.20	2.90	3.63	4.05	3.70
31.....	2.85		3.53		2.80		3.80	3.30		3.60		4.45
1901.												
1.....	4.10	3.65	3.43	4.50	4.45	4.80	4.63	3.55	7.00	4.10	3.56	3.28
2.....	3.90	3.60	3.40	6.85	4.40	4.55	(*)	3.47	6.40	5.80	3.56	3.28
3.....	3.85	3.65	3.40	8.15	4.30	4.45		3.41	5.90	5.00	3.54	3.88
4.....	3.77	4.75	3.40	7.20	4.28	4.40		3.60	5.61	4.61	3.53	3.98
5.....	3.73	3.95	3.38	5.65	4.23	4.57		3.61	5.48	4.30	3.51	3.58
6.....	3.60	3.87	3.38	5.30	4.18	4.65		8.75	5.20	4.10	3.49	3.52
7.....	3.61	3.80	3.38	5.00	4.02	5.27		8.20	5.02	4.05	3.48	3.47
8.....	3.59	3.85	3.38	4.75	4.01	4.87		6.90	4.97	4.00	3.45	3.38
9.....	3.55	3.95	3.37	4.60	4.15	4.42		4.15	4.98	3.95	3.42	3.48
10.....	3.60	3.90	3.62	4.85	4.20	4.33		4.23	4.93	3.94	3.40	3.48
11.....	4.49	3.85	5.20	4.60	4.17	4.25		4.33	4.98	3.94	3.39	4.18
12.....	7.40	3.85	4.00	4.35	4.15	4.22		4.60	4.80	3.90	3.38	3.83
13.....	6.33	3.82	3.75	4.25	4.10	4.20		5.70	5.10	4.73	3.38	3.73
14.....	5.30	3.75	3.60	5.55	4.05	6.30		8.27	4.85	4.20	3.28	5.48
15.....	4.40	3.68	3.53	4.92	3.95	6.81		9.01	4.60	3.93	3.30	9.98
16.....	4.25	3.67	3.52	4.55	3.93	6.60		8.77	4.42	3.88	3.31	9.08
17.....	4.10	3.64	3.49	4.50	3.91	5.75		9.40	6.75	3.73	3.29	7.28
18.....	4.05	3.62	3.46	4.40	4.21	5.38		8.60	6.80	3.67	3.30	5.08
19.....	4.00	3.60	3.44	7.40	4.67	4.90		8.00	5.37	3.63	3.29	4.68
20.....	3.92	3.58	3.42	7.95	5.58	5.15		7.70	4.95	3.62	3.29	4.39
21.....	3.87	3.55	4.60	7.40	8.65	5.67		7.28	4.62	3.60	3.28	4.37
22.....	3.83	3.33	4.15	6.95	10.40	5.30		7.08	4.45	3.59	3.28	4.38
23.....	3.80	3.50	3.80	6.65	6.35	4.85		7.48	4.37	3.58	3.30	4.23
24.....	3.80	3.50	3.70	6.25	5.55	4.75		7.55	4.30	3.58	3.35	4.13
25.....	3.77	3.50	5.45	5.95	5.83	4.70		6.80	4.20	3.58	3.37	4.13
26.....	3.68	3.50	9.92	5.00	5.73	4.77		6.35	4.10	3.58	3.36	4.15
27.....	3.67	3.48	8.43	4.88	5.57	4.53		6.25	4.05	3.57	3.34	4.18
28.....	3.65	3.45	7.35	4.65	5.30	4.67		6.77	4.00	3.57	3.32	4.58
29.....	3.54		5.27	4.58	5.17	4.75		8.57	4.65	3.56	3.30	10.93
30.....	3.70		5.00	4.50	4.97	4.70		8.48	4.28	3.56	3.29	9.48
31.....	3.73		4.75		4.85		3.60	7.40		3.56		9.13

\*Wire broken.

RATING TABLE FOR FRENCH BROAD RIVER AT BINGHAM SCHOOL BRIDGE, ASHEVILLE, N. C.,  
FOR 1897-1898.

Water Height Feet	Discharge Cubic Feet	Water Height Feet	Discharge Cubic Feet	Water Height Feet	Discharge Cubic Feet	Water Height Feet	Discharge Cubic Feet
2.1	428	3.1	1,180	5.1	1,120	7.1	4,720
2.2	432	3.2	1,185	5.2	1,125	7.2	4,740
2.3	445	3.3	1,190	5.3	1,130	7.3	4,760
2.4	448	3.4	1,195	5.4	1,135	7.4	4,780
2.5	455	3.5	1,200	5.5	1,140	7.5	4,800
2.6	465	3.6	1,210	5.6	1,145	7.6	4,820
2.7	475	3.7	1,220	5.7	1,150	7.7	4,840
2.8	485	3.8	1,230	5.8	1,155	7.8	4,860
2.9	495	3.9	1,240	5.9	1,160	7.9	4,880
3.0	505	4.0	1,250	6.0	1,165	8.0	4,900
3.1	515	4.1	1,260	6.1	1,170	8.1	4,920
3.2	525	4.2	1,270	6.2	1,175	8.2	4,940
3.3	535	4.3	1,280	6.3	1,180	8.3	4,960
3.4	545	4.4	1,290	6.4	1,185	8.4	4,980
3.5	555	4.5	1,300	6.5	1,190	8.5	5,000
3.6	565	4.6	1,310	6.6	1,195	8.6	5,020
3.7	575	4.7	1,320	6.7	1,200	8.7	5,040
3.8	585	4.8	1,330	6.8	1,205	8.8	5,060
3.9	595	4.9	1,340	6.9	1,210	8.9	5,080
4.0	605	5.0	1,350	7.0	1,215	9.0	5,100
4.1	615	5.1	1,360	7.1	1,220	9.1	5,120
4.2	625	5.2	1,370	7.2	1,225	9.2	5,140
4.3	635	5.3	1,380	7.3	1,230	9.3	5,160
4.4	645	5.4	1,390	7.4	1,235	9.4	5,180
4.5	655	5.5	1,400	7.5	1,240	9.5	5,200
4.6	665	5.6	1,410	7.6	1,245	9.6	5,220
4.7	675	5.7	1,420	7.7	1,250	9.7	5,240
4.8	685	5.8	1,430	7.8	1,255	9.8	5,260
4.9	695	5.9	1,440	7.9	1,260	9.9	5,280
5.0	705	6.0	1,450	8.0	1,265	10.0	5,300
5.1	715	6.1	1,460	8.1	1,270	10.1	5,320
5.2	725	6.2	1,470	8.2	1,275	10.2	5,340
5.3	735	6.3	1,480	8.3	1,280	10.3	5,360
5.4	745	6.4	1,490	8.4	1,285	10.4	5,380
5.5	755	6.5	1,500	8.5	1,290	10.5	5,400
5.6	765	6.6	1,510	8.6	1,295	10.6	5,420
5.7	775	6.7	1,520	8.7	1,300	10.7	5,440
5.8	785	6.8	1,530	8.8	1,305	10.8	5,460
5.9	795	6.9	1,540	8.9	1,310	10.9	5,480
6.0	805	7.0	1,550	9.0	1,315	11.0	5,500
6.1	815	7.1	1,560	9.1	1,320	11.1	5,520
6.2	825	7.2	1,570	9.2	1,325	11.2	5,540
6.3	835	7.3	1,580	9.3	1,330	11.3	5,560
6.4	845	7.4	1,590	9.4	1,335	11.4	5,580
6.5	855	7.5	1,600	9.5	1,340	11.5	5,600
6.6	865	7.6	1,610	9.6	1,345	11.6	5,620
6.7	875	7.7	1,620	9.7	1,350	11.7	5,640
6.8	885	7.8	1,630	9.8	1,355	11.8	5,660
6.9	895	7.9	1,640	9.9	1,360	11.9	5,680
7.0	905	8.0	1,650	10.0	1,365	12.0	5,700
7.1	915	8.1	1,660	10.1	1,370	12.1	5,720
7.2	925	8.2	1,670	10.2	1,375	12.2	5,740
7.3	935	8.3	1,680	10.3	1,380	12.3	5,760
7.4	945	8.4	1,690	10.4	1,385	12.4	5,780
7.5	955	8.5	1,700	10.5	1,390	12.5	5,800
7.6	965	8.6	1,710	10.6	1,395	12.6	5,820
7.7	975	8.7	1,720	10.7	1,400	12.7	5,840
7.8	985	8.8	1,730	10.8	1,405	12.8	5,860
7.9	995	8.9	1,740	10.9	1,410	12.9	5,880
8.0	1,005	9.0	1,750	11.0	1,415	13.0	5,900
8.1	1,015	9.1	1,760	11.1	1,420	13.1	5,920
8.2	1,025	9.2	1,770	11.2	1,425	13.2	5,940
8.3	1,035	9.3	1,780	11.3	1,430	13.3	5,960
8.4	1,045	9.4	1,790	11.4	1,435	13.4	5,980
8.5	1,055	9.5	1,800	11.5	1,440	13.5	6,000
8.6	1,065	9.6	1,810	11.6	1,445	13.6	6,020
8.7	1,075	9.7	1,820	11.7	1,450	13.7	6,040
8.8	1,085	9.8	1,830	11.8	1,455	13.8	6,060
8.9	1,095	9.9	1,840	11.9	1,460	13.9	6,080
9.0	1,105	10.0	1,850	12.0	1,465	14.0	6,100
9.1	1,115	10.1	1,860	12.1	1,470	14.1	6,120
9.2	1,125	10.2	1,870	12.2	1,475	14.2	6,140
9.3	1,135	10.3	1,880	12.3	1,480	14.3	6,160
9.4	1,145	10.4	1,890	12.4	1,485	14.4	6,180
9.5	1,155	10.5	1,900	12.5	1,490	14.5	6,200
9.6	1,165	10.6	1,910	12.6	1,495	14.6	6,220
9.7	1,175	10.7	1,920	12.7	1,500	14.7	6,240
9.8	1,185	10.8	1,930	12.8	1,505	14.8	6,260
9.9	1,195	10.9	1,940	12.9	1,510	14.9	6,280
10.0	1,205	11.0	1,950	13.0	1,515	15.0	6,300
10.1	1,215	11.1	1,960	13.1	1,520	15.1	6,320
10.2	1,225	11.2	1,970	13.2	1,525	15.2	6,340
10.3	1,235	11.3	1,980	13.3	1,530	15.3	6,360
10.4	1,245	11.4	1,990	13.4	1,535	15.4	6,380
10.5	1,255	11.5	2,000	13.5	1,540	15.5	6,400
10.6	1,265	11.6	2,010	13.6	1,545	15.6	6,420
10.7	1,275	11.7	2,020	13.7	1,550	15.7	6,440
10.8	1,285	11.8	2,030	13.8	1,555	15.8	6,460
10.9	1,295	11.9	2,040	13.9	1,560	15.9	6,480
11.0	1,305	12.0	2,050	14.0	1,565	16.0	6,500
11.1	1,315	12.1	2,060	14.1	1,570	16.1	6,520
11.2	1,325	12.2	2,070	14.2	1,575	16.2	6,540
11.3	1,335	12.3	2,080	14.3	1,580	16.3	6,560
11.4	1,345	12.4	2,090	14.4	1,585	16.4	6,580
11.5	1,355	12.5	2,100	14.5	1,590	16.5	6,600
11.6	1,365	12.6	2,110	14.6	1,595	16.6	6,620
11.7	1,375	12.7	2,120	14.7	1,600	16.7	6,640
11.8	1,385	12.8	2,130	14.8	1,605	16.8	6,660
11.9	1,395	12.9	2,140	14.9	1,610	16.9	6,680
12.0	1,405	13.0	2,150	15.0	1,615	17.0	6,700
12.1	1,415	13.1	2,160	15.1	1,620	17.1	6,720
12.2	1,425	13.2	2,170	15.2	1,625	17.2	6,740
12.3	1,435	13.3	2,180	15.3	1,630	17.3	6,760
12.4	1,445	13.4	2,190	15.4	1,635	17.4	6,780
12.5	1,455	13.5	2,200	15.5	1,640	17.5	6,800
12.6	1,465	13.6	2,210	15.6	1,645	17.6	6,820
12.7	1,475	13.7	2,220	15.7	1,650	17.7	6,840
12.8	1,485	13.8	2,230	15.8	1,655	17.8	6,860
12.9	1,495	13.9	2,240	15.9	1,660	17.9	6,880
13.0	1,505	14.0	2,250	16.0	1,665	18.0	6,900
13.1	1,515	14.1	2,260	16.1	1,670	18.1	6,920
13.2	1,525	14.2	2,270	16.2	1,675	18.2	6,940
13.3	1,535	14.3	2,280	16.3	1,680	18.3	6,960
13.4	1,545	14.4	2,290	16.4	1,685	18.4	6,980
13.5	1,555	14.5	2,300	16.5	1,690	18.5	7,000
13.6	1,565	14.6	2,310	16.6	1,695	18.6	7,020
13.7	1,575	14.7	2,320	16.7	1,700	18.7	7,040
13.8	1,585	14.8	2,330	16.8	1,705	18.8	7,060
13.9	1,595	14.9	2,340	16.9	1,710	18.9	7,080
14.0	1,605	15.0	2,350	17.0	1,715	19.0	7,100
14.1	1,615	15.1	2,360	17.1	1,720	19.1	7,120
14.2	1,625	15.2	2,370	17.2	1,725	19.2	7,140
14.3	1,635	15.3	2,380	17.3	1,730	19.3	7,160
14.4	1,645	15.4	2,390	17.4	1,735	19.4	7,180
14.5	1,655	15.5	2,400	17.5	1,740	19.5	7,200
14.6	1,665	15.6	2,410	17.6	1,745	19.6	7,220
14.7	1,675	15.7	2,420	17.7	1,750	19.7	7,240
14.8	1,685	15.8	2,430	17.8	1,755	19.8	7,260
14.9	1,695	15.9	2,440	17.9	1,760	19.9	7,280
15.0	1,705	16.0	2,450	18.0	1,765	20.0	7,300
15.1	1,715	16.1	2,460	18.1	1,770	20.1	7,320
15.2	1,725	16.2	2,470	18.2	1,775	20.2	7,340
15.3	1,735	16.3	2,480	18.3	1,780	20.3	7,360
15.4	1,745	16.4	2,490	18.4	1,785	20.4	7,380
15.5	1,755	16.5	2,500	18.5	1,790	20.5	7,400
15.6	1,765	16.6	2,510	18.6	1,795	20.6	7,420
15.7	1,775	16.7	2,520	18.7	1,800	20.7	7,440
15.8	1,785	16.8	2,530	18.8	1,805	20.8	7,460
15.9	1,795	16.9	2,540	18.9	1,810	20.9	7,480
16.0	1,805	17.0	2,550	19.0	1,815	21.0	7,500
16.1	1,815	17.1	2,560	19.1	1,820	21.1	7,520
16.2	1,825	17.2	2,570	19.2	1,825	21.2	7,540
16.3	1,835	17.3	2,580	19.3	1,830	21.3	7,560
16.4	1,845	17.4	2,590	19.4	1,835	21.4	7,580
16.5	1,855	17.5	2,600	19.5	1,840	21.5	7,600
16.6	1,865	17.6	2,610	19.6	1,845	21.6	7,620
16.7	1,875	17.7	2,620	19.7	1,850	21.7	7,640
16.8	1,885	17.8	2,630	19.8	1,855	21.8	7,660
16.9	1,895	17.9	2,640	19.9	1,860	21.9	7,680
17.0	1,905	18.0	2,650	20.0	1,865	22.0	7,700
17.1	1,915	18.1	2,660	20.1	1,870	22.1	7,720
17.2	1,925	18.2	2,670	20.2	1,875	22.2	7,740
17.3	1,935	18.3	2,680	20.3	1,880	22.3	7,760
17.4	1,945	18.4	2,6				

ESTIMATED MONTHLY DISCHARGE OF FRENCH BROAD RIVER AT BINGHAM SCHOOL BRIDGE,  
ASHEVILLE, N. C.

[Drainage area, 987 square miles.]

Month.	Discharge in Second-feet.			Total in Acre-feet.	Run-off.	
	Maxi- mum.	Mini- mum.	Mean.		Second- feet per Square Mile.	Depth in Inches.
1895.						
September 17-30 .....	1,130	745	823	22,854	0.83	0.43
October .....	780	710	732	45,009	.74	.85
November .....	1,230	745	844	50,221	.85	.94
December .....	3,330	745	1,154	70,956	1.17	1.35
					0.89	3.57
1896.						
January .....	4,430	800	1,439	88,481	1.46	1.68
February .....	3,380	1,180	1,733	99,684	1.76	1.90
March .....	1,630	1,030	1,227	38,944	1.24	.74
April .....	2,130	820	1,092	64,978	1.11	1.24
May .....	2,530	780	1,063	65,362	1.08	1.25
June .....	1,330	745	922	54,863	1.93	1.03
July .....	7,780	727	2,191	134,719	2.22	2.56
August .....	1,180	710	866	53,248	.88	1.01
September .....	1,130	672	772	45,937	.78	.87
October .....	762	685	705	43,348	.71	.82
November .....	4,130	762	1,634	97,230	1.66	1.85
December .....	3,730	845	1,281	78,765	1.30	1.50
The year .....	7,780	672	1,244	865,759	1.26	16.45
1897.						
January .....	2,380	780	1,164	71,570	1.18	1.36
February .....	5,830	1,530	2,709	145,450	2.74	2.85
March .....	5,180	1,630	3,036	186,680	3.08	3.56
April .....	5,530	1,580	2,607	155,130	2.64	2.04
May .....	5,030	1,180	1,920	118,056	1.95	2.25
June .....	2,430	980	1,410	83,900	1.43	1.60
July .....	1,530	800	1,187	72,985	1.20	1.38
August .....	1,930	710	908	55,830	.92	1.06
September .....	762	672	698	41,535	.71	.79
October .....	1,280	652	792	48,696	.80	.92
November .....	1,780	652	841	50,040	.85	.94
December .....	1,580	697	950	58,412	.96	1.10
The year .....	5,830	652	1,518	1,088,284	1.54	20.75
1898.						
January .....	3,230	801	1,345	82,701	1.36	1.57
February .....	1,430	801	968	53,760	.98	1.02
March .....	3,930	745	1,051	64,624	1.07	1.23
April .....	2,530	903	1,575	93,719	1.60	1.79
May .....	1,930	782	1,036	63,702	1.05	1.21
June .....	2,430	715	1,020	60,694	1.03	1.15
July .....	4,930	675	2,051	126,112	2.08	2.40
August .....	5,180	1,630	2,911	178,992	2.95	3.40
September .....	4,530	1,330	2,330	138,644	2.36	2.63
October .....	6,030	1,230	2,982	183,357	3.02	3.48
November .....	1,530	930	1,197	71,226	1.21	1.35
December .....	3,430	875	1,693	104,099	1.72	1.98
The year .....	6,030	675	1,680	1,221,630	1.70	23.21



ESTIMATED MONTHLY DISCHARGE OF FRENCH BRIDGE RIVER AT BINGHAM STEEL BRIDGE,  
ASHEVILLE, N. C.—Continued.

[DRAINAGE AREA, 987 SQUARE MILES.]

Month.	Discharge in Second-feet.			Total in Acres-feet.	Run-off.	
	Maxi- mum.	Mini- mum.	Mean.		Second- feet per Square Mile.	Depth in Inches.
1899.						
January	5,950	2,400	3,547	215,087	3.59	4.14
February	20,400	2,360	7,515	434,023	7.91	9.24
March	30,730	3,710	10,413	640,270	10.55	12.16
April	11,580	3,710	6,396	390,112	6.47	7.22
May	4,760	1,565	3,367	206,873	3.44	3.97
June	1,900	1,235	1,446	86,423	1.51	1.69
July	2,655	945	1,221	75,076	1.24	1.43
August	3,630	755	1,160	71,326	1.19	1.36
September	2,520	690	1,122	66,764	1.14	1.27
October	1,455	690	945	56,106	.96	1.10
November	1,190	755	915	54,446	.93	1.03
December	11,150	600	2,297	141,237	2.33	2.69
The year	30,720	690	3,393	2,436,753	3.44	46.29
1900.						
January	4,345	920	2,221	136,564	2.25	2.60
February	16,325	1,235	4,225	234,644	4.28	4.46
March	14,400	2,110	4,215	259,355	4.27	4.92
April	14,400	1,610	4,006	238,374	4.06	4.53
May	4,620	950	1,748	107,480	1.77	2.04
June	13,975	1,675	4,929	257,345	4.89	5.45
July	5,350	2,445	3,008	184,955	3.05	3.52
August	2,620	1,810	2,018	124,082	2.04	2.36
September	6,875	1,280	2,074	123,412	2.10	2.34
October	18,250	1,260	3,200	196,760	3.24	3.74
November	11,075	2,030	3,145	157,140	3.19	3.56
December	6,350	2,275	3,258	200,327	3.30	3.81
The year	18,250	920	3,163	2,280,438	3.20	43.33

Month.	Discharge in Second-feet.			Run-off.	
	Maxi- mum.	Mini- mum.	Mean.	Second- feet per Square Mile.	Depth in Inches.
1901.					
January	12,940	2,170	3,206	3.25	3.75
February	4,135	2,055	2,396	2.42	2.51
March	22,220	1,945	4,166	4.22	4.86
April	15,655	3,145	6,772	6.86	7.65
May	24,160	2,620	5,043	5.11	5.89
June	10,800	3,060	4,852	4.92	5.49
July*					
August	20,320	2,000	10,740	10.88	12.54
September	11,500	2,760	5,132	5.20	5.80
October	7,300	2,170	2,810	2.84	3.28
November	2,170	1,890	1,984	2.01	2.24
December	26,350	1,890	6,288	6.37	7.35

\*No record.

## FRENCH BROAD RIVER AT SMITH BRIDGE, ASHEVILLE, N. C.

This station is located at the steel highway bridge known as Smith Bridge, about 1 mile below the Southern Railway depot at Asheville, N. C., and near the end of the Patton Avenue line of the Asheville Street Railway Company. The United States Weather Bureau maintains a station at this place, and during 1904 a number of discharge measurements were made by the United States Geological Survey. Since then the discharge measurements have been continued and the gage heights have been furnished by the Weather Bureau.

The channel is straight for about 1,500 feet above and 800 feet below the station. There is but one channel at all stages, broken by three piers at ordinary and four at high-water stages. The banks are not high, but all water will probably be confined between the abutments, as the road has been raised by embankments. The current is fairly swift and somewhat irregular. The bed is of sand and bowlders and is irregular.

Discharge measurements are made from the walkway on the upstream side of the bridge, the initial point for soundings being the end of the handrail at the left bank. The bridge has five spans of 100 feet each, supported by four stone piers and two stone abutments.

A new boxed chain gage has been installed by the Weather Bureau to take the place of the vertical gage which is attached to the southwest corner of the second stone pier from the left bank. It is located on the downstream side of the bridge in the second panel to the left of the pier to which the vertical gage is attached. The length of the chain is 26.45 feet. The bench mark is the top of the downstream end of the second floor beam to the left of the second pier from the left bank; elevation, 20.08 feet above the datum of the gage.

## DISCHARGE MEASUREMENTS OF FRENCH BROAD RIVER AT SMITH BRIDGE, ASHEVILLE, N. C.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1904.						
May 21	B. S. Drane.....	345	843	1.31	-0.24	1,107
July 20	do.....	339	668	1.06	-.68	707
Aug. 13	do.....	350	898	1.92	.09	1,725
Oct. 1	do.....	328	487	1.04	-.91	506
Dec. 10	do.....	330	656	1.08	-.68	707
1905.						
Apr. 17	B. S. Drane.....	318	930	1.70	-0.07	1,577
June 28	do.....	320	964	1.74	.00	1,674
Aug. 26	do.....	331	1,339	2.48	1.18	3,326
Nov. 10	W. E. Hall.....	300	679	1.37	-.52	931
1906.						
Mar. 1	W. E. Hall.....	314	1,100	....	0.43	2,140
Apr. 16	O. P. Hall.....	336	1,830	....	2.42	6,360
June 16	W. E. Hall.....	342	2,400	....	3.87	10,600
1907.						
Apr. 2	Warren E. Hall.....	317	970	1.60	0.04	1,553
May 25	do.....	321	993	1.62	.06	1,608
Dec. 12	do.....	316	1,051	1.82	.58	1,910

DAILY GAGE HEIGHT, IN FEET, OF FRENCH BROAD RIVER AT SMITH BRIDGE, ASHEVILLE, N. C.,  
FOR 1905 AND 1906.

1905.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	-0.50	-0.40	0.50	-0.30	-0.10	0.40	0.50	0.10	0.10	-0.50	-0.50	-0.60
2.....	-.50	-.40	.50	-.30	-.20	.20	2.00	.10	.40	-.50	-.50	-.60
3.....	-.60	-.60	.40	-.30	-.30	.10	1.50	.10	.90	-.50	-.50	2.80
4.....	-.90	-.60	.20	-.40	.20	.00	.50	.10	.50	-.20	-.50	2.30
5.....	-.90	-.60	.20	-.30	.70	.00	.40	.30	.10	-.30	-.50	.60
6.....	-.60	.60	.10	.30	1.70	.20	.80	.20	.00	-.40	-.50	.20
7.....	1.90	.00	.10	.10	1.20	-.30	.60	.00	.00	-.50	-.50	-.20
8.....	.00	.10	.10	-.10	1.30	-.40	.60	.00	-.20	-.50	-.60	1.90
9.....	-.50	-.10	-.10	-.10	.50	-.40	.50	1.50	-.10	-.50	-.60	2.80
10.....	-.50	.90	.50	.10	1.00	-.40	1.10	2.30	-.10	-.60	-.60	2.80
11.....	-.60	.50	1.00	.00	.90	-.40	2.40	3.30	-.20	.00	-.60	1.50
12.....	.00	.10	.50	.40	.40	-.40	5.70	3.90	-.20	1.30	-.60	.80
13.....	3.40	1.00	.60	.60	.40	-.40	6.00	3.50	-.20	.00	-.60	.70
14.....	2.90	1.60	.60	.40	.20	-.40	5.10	2.70	-.20	-.30	-.60	.50
15.....	.90	1.00	.30	.20	.20	-.40	4.40	1.70	-.20	-.40	-.60	.40
16.....	.40	.50	.20	.20	1.80	.50	3.00	1.70	-.20	-.40	-.60	.90
17.....	.00	.10	.10	.10	1.50	3.00	3.00	1.10	-.30	-.40	-.60	.50
18.....	.00	.20	.10	.00	.80	2.50	1.60	.90	-.30	-.40	-.60	.40
19.....	-.20	-.20	.00	-.10	.40	3.00	1.50	.70	-.30	-.40	-.60	.20
20.....	-.20	-.40	.00	-.20	.20	1.30	1.20	.70	-.30	-.50	-.60	.10
21.....	-.30	2.50	.10	-.20	.20	1.00	1.00	.60	-.30	-.50	-.60	2.00
22.....	-.30	2.00	.50	-.20	.20	.90	1.10	.50	-.30	-.50	-.50	1.80
23.....	-.30	2.10	.10	-.30	.50	.70	.90	1.00	-.30	-.50	-.60	1.20
24.....	-.30	-.30	1.60	.00	.60	.40	.70	1.40	-.40	-.50	-.60	1.00
25.....	-.30	1.10	.30	-.40	.30	.20	1.00	1.60	-.40	-.50	-.60	.80
26.....	-.30	1.00	.10	-.30	.30	.10	.50	1.40	-.40	-.50	-.60	.50
27.....	-.20	.80	.00	-.10	.30	.30	.30	.90	-.50	-.50	-.60	.30
28.....	.00	.50	-.10	-.20	3.00	.10	.50	.50	-.50	-.40	-.60	.20
29.....	-.20	.....	-.20	-.20	1.50	-.10	1.00	1.00	-.50	-.40	-.60	.80
30.....	-.20	.....	-.10	.10	.90	.10	.80	.80	-.50	-.50	-.60	.70
31.....	-.10	.....	-.20	.....	.60	.....	.20	.20	.....	-.50	.....	.50
1906.												
1.....	0.30	2.00	0.40	1.80	0.60	0.10	0.50	0.80	2.20	3.40	0.70	0.70
2.....	.20	1.80	.40	1.60	.50	.50	.20	.90	2.00	3.40	.60	.60
3.....	.30	1.60	.50	1.00	.50	.50	.50	.80	1.70	4.30	.50	.50
4.....	4.00	1.20	2.00	1.00	.50	.40	.70	.70	1.10	5.30	.50	.50
5.....	3.80	1.10	1.40	.80	.50	.40	.70	.60	1.60	4.90	.50	.50
6.....	2.90	1.00	1.00	.80	.50	1.40	.70	.50	2.00	4.50	.50	.40
7.....	1.40	1.00	.60	.70	.60	.80	.50	.80	1.50	3.60	.40	.40
8.....	1.20	1.00	.60	.70	.50	.40	.30	.70	1.30	3.20	.30	.40
9.....	1.00	.90	1.00	.60	.30	.40	1.00	.30	1.00	2.60	.30	.40
10.....	.70	.80	.80	.90	.30	.80	.50	.20	.70	2.30	.30	.40
11.....	.30	.60	.60	.70	.20	.70	.30	.20	.60	2.00	.20	1.60
12.....	1.00	.70	.50	.50	.20	.60	.20	.10	.70	1.80	.20	1.10
13.....	1.10	.90	.50	.50	.20	1.80	.20	.10	1.50	1.70	.20	.80
14.....	1.30	.70	.50	.60	.10	3.60	.20	1.00	.80	1.50	.10	.60
15.....	1.10	.60	1.00	3.20	.10	3.50	1.40	1.10	.60	1.40	.10	.50
16.....	1.00	.50	2.20	2.60	.10	4.20	2.10	.80	.50	1.30	.10	.50
17.....	.80	.60	1.40	1.60	.10	3.40	1.60	.80	.40	1.30	.10	.60
18.....	.70	.60	1.00	1.20	.10	3.50	2.50	1.00	.70	1.40	2.00	1.20
19.....	.70	.60	.90	1.00	.00	2.00	2.90	1.40	5.70	2.60	5.00	.90
20.....	.50	.50	2.60	.90	.00	1.50	2.10	1.00	5.10	2.00	4.10	.90
21.....	.50	.50	2.00	.80	.00	1.10	1.50	1.40	4.70	1.60	3.60	.90
22.....	.80	1.10	1.50	.80	.00	.40	1.50	.70	4.00	1.40	3.10	.50
23.....	7.80	1.80	1.10	.70	.10	.90	2.50	1.00	2.80	1.30	3.00	.70
24.....	7.00	.60	1.00	.60	.10	.90	1.60	.80	2.00	1.30	1.50	.60
25.....	5.00	.60	.90	.50	-.20	1.40	1.10	.80	2.10	1.20	1.10	.50
26.....	3.60	.50	.80	.50	.00	1.10	1.10	.60	2.10	1.10	1.00	.50
27.....	3.50	.50	.80	.50	1.20	.70	1.40	.90	2.10	1.00	.90	.40
28.....	2.10	.50	.80	.50	1.00	.80	1.10	2.60	2.20	.90	.90	.40
29.....	2.20	.....	.90	.50	.60	.60	.70	2.50	3.50	.90	.90	.40
30.....	2.10	.....	1.50	.80	.30	.60	.80	2.80	3.50	.80	.80	.40
31.....	2.00	.....	2.20	.....	.10	.....	.70	3.20	.....	.80	.....	1.60

DAILY GAGE HEIGHT, IN FEET, OF FRENCH BROAD RIVER AT SMITH BRIDGE, ASHEVILLE, N. C., FOR 1907.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1....	2.80	0.20	0.00	0.50	3.20	0.60	-0.20	-0.30	-.60	-0.20	-0.70	0.00
2....	1.80	.40	.40	.30	.10	1.40	-.30	-.30	-.60	-.40	-.70	-.10
3....	1.40	.40	1.00	.10	.80	.80	-.10	-.40	-.60	-.40	+.30	-.10
4....	1.10	.40	.50	-.10	1.00	.40	-.10	-.50	-.50	-.40	-.30	-.20
5....	1.00	1.00	.20	-.20	.80	.20	-.20	-.60	-.40	-.40	-.60	-.20
6....	.80	.70	.10	.00	.50	.10	-.30	-.60	-.40	-.40	-.60	-.30
7....	.70	.40	.10	.70	.60	.00	-.30	-.60	-.60	-.40	-.60	-.30
8....	.50	.30	.20	.40	.60	.10	-.40	-.50	-.60	-.50	-.60	-.30
9....	.50	.10	.10	.30	.50	.30	-.40	-.50	-.60	-.30	-.60	-.20
10....	.50	.10	.10	.20	.40	.90	-.40	-.60	-.60	-.40	-.50	.70
11....	.50	.10	.40	.10	.40	.30	-.20	-.50	-.50	.50	-.50	2.00
12....	.40	.10	.30	.10	.40	.10	.00	-.30	-.50	.50	-.50	.70
13....	.40	.10	.20	.00	.30	-.10	-.10	-.20	-.50	.60	-.50	.20
14....	.40	.10	.10	.00	.20	.10	-.30	-.30	-.60	-.60	-.50	2.50
15....	.40	.10	.30	-.10	.10	-.10	-.40	-.30	-.60	-.60	-.60	3.20
16....	.30	.10	.30	-.10	.10	-.20	.00	-.40	-.70	-.60	-.60	2.80
17....	.30	.10	.20	-.10	.10	-.30	.00	-.20	-.60	-.60	-.60	1.00
18....	.30	.00	.10	-.20	.10	-.30	.00	-.20	-.60	-.60	-.60	.70
19....	.30	.00	.10	+.10	.00	-.30	-.20	-.30	-.60	-.60	+.10	.60
20....	.20	-.10	.10	.10	-.10	-.30	-.20	-.30	-.70	-.60	.00	.50
21....	.30	-.10	.00	-.10	-.20	-.10	-.30	-.40	-.60	-.60	.20	.30
22....	.30	-.10	.00	+.20	-.20	.10	-.30	.00	-.60	-.60	1.70	.20
23....	.20	-.10	.00	1.00	-.20	-.10	-.40	.10	+1.40	-.70	1.50	3.00
24....	.10	-.10	-.10	.90	-.20	.10	-.40	-.10	2.00	-.70	2.90	3.50
25....	.10	.00	-.10	.40	-.20	.10	-.40	-.20	.30	-.70	2.50	2.00
26....	.10	.10	-.20	.20	.70	.20	-.20	-.30	-.20	-.70	1.10	1.30
27....	.20	.20	.10	1.60	.80	-.10	-.30	-.40	-.40	-.70	.80	1.00
28....	.10	.10	.00	.60	.20	.30	-.40	-.50	-.30	-.60	.40	.70
29....	.10	-----	-.10	.40	.00	.30	-.30	-.60	+.40	-.70	.00	.60
30....	.10	-----	-.20	.30	-.20	.10	.10	-.60	.10	-.70	.00	.80
31....	.10	-----	.20	-----	.20	-----	-.20	-.60	-----	-.70	-----	2.70

DAILY GAGE HEIGHT, IN FEET, OF FRENCH BROAD RIVER AT SMITH BRIDGE, ASHEVILLE, N. C.,  
FOR 1908.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1.....	1.70	0.30	1.20	0.80	1.00	0.20	--0.30	0.10	0.30	-0.10
2.....	1.20	.30	1.10	.90	.80	.10	--.30	--.20	.20	--.20
3.....	1.00	.30	1.10	.60	.80	.00	.40	--.20	.20	--.30
4.....	.80	.40	1.10	.50	.70	.10	.50	.20	.10	--.30
5.....	1.50	.40	1.00	.50	.50	.00	1.50	.00	.10	--.30
6.....	1.20	.50	1.00	.50	.40	.40	1.90	.40	2.70	--.30
7.....	1.00	.70	.90	.50	1.20	.20	1.20	.80	1.30	--.30
8.....	1.30	.70	.90	.60	1.70	.10	1.30	.70	.40	--.40
9.....	.90	.60	.80	.50	1.00	.00	1.00	.80	.40	--.30
10.....	.70	.60	.70	.40	.80	.30	1.00	.50	.40	2.50
11.....	.50	.70	.60	.40	.60	.30	.80	.20	.30	.90
12.....	5.90	1.80	.90	.30	.50	.10	.30	.00	.20	.70
13.....	4.50	1.90	.90	.30	.50	.10	.10	.00	.20	.00
14.....	3.50	2.10	.80	.20	.40	.30	.20	--.10	.20	.00
15.....	2.00	5.90	.70	.20	.30	.30	.10	--.10	.10	--.10
16.....	1.50	5.40	.60	1.80	.30	.30	.50	--.10	.00	--.10
17.....	1.20	4.80	.50	1.20	.60	.00	.20	.30	.00	--.20
18.....	1.00	3.80	.40	.90	.90	.00	.10	.00	.00	--.30
19.....	1.00	2.30	.40	.80	1.20	.00	.10	--.10	--.10	--.30
20.....	.90	2.40	.50	.80	.90	--.10	.00	--.10	--.20	--.30
21.....	.70	1.80	1.90	.60	.60	.10	--.20	--.10	--.20	--.30
22.....	.50	1.70	1.40	.50	.40	.00	--.20	1.10	--.20	--.30
23.....	.50	1.40	1.10	.40	.40	.00	.30	1.10	--.20	1.20
24.....	.50	1.30	3.00	.40	.50	.00	.20	1.80	--.20	3.40
25.....	.40	1.20	2.90	1.10	.40	.00	.00	3.20	--.20	1.70
26.....	.40	1.40	1.80	2.90	.40	--.10	.20	4.90	--.20	1.10
27.....	.60	1.80	1.40	1.70	.50	--.10	--.10	4.20	--.20	.80
28.....	.60	1.40	1.10	1.40	.40	--.20	.30	3.00	.10	.60
29.....	.40	1.20	1.00	1.10	.40	--.20	.40	1.30	.20	2.60
30.....	.30	-----	.90	.90	.50	--.20	.70	1.00	.00	3.60
31.....	.30	-----	.80	-----	.30	-----	.40	.80	-----	2.10

RATING TABLE FOR FRENCH BROAD RIVER AT SMITH BRIDGE, ASHEVILLE, N. C., FOR 1905.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
--1.00	420	0.40	2,190	1.80	4,310	3.40	7,030
--.90	510	.50	2,330	1.90	4,470	3.60	7,390
--.80	610	.60	2,470	2.00	4,630	3.80	7,750
--.70	720	.70	2,620	2.10	4,790	4.00	8,110
--.60	840	.80	2,770	2.20	4,950	4.20	8,490
--.50	960	.90	2,920	2.30	5,120	4.40	8,870
--.40	1,090	1.00	3,070	2.40	5,290	4.60	9,250
--.30	1,220	1.10	3,220	2.50	5,460	4.80	9,630
--.20	1,350	1.20	3,370	2.60	5,630	5.00	10,010
--.10	1,490	1.30	3,520	2.70	5,800	5.50	11,010
.00	1,630	1.40	3,670	2.80	5,970	6.00	12,010
.10	1,770	1.50	3,830	2.90	6,140		
.20	1,910	1.60	3,990	3.00	6,310		
.30	2,050	1.70	4,150	3.20	6,670		

NOTE.—The above table is based on nine discharge measurements made during 1904-1905. It is well defined between gage heights --0.9 foot and 1.2 feet. The table has been extended beyond these limits.

RATING TABLE FOR FRENCH BROAD RIVER AT SMITH BRIDGE, ASHEVILLE, N. C., FOR 1906.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
-0.20	1,330	1.00	3,170	2.20	5,730	3.80	10,370
-.10	1,460	1.10	3,350	2.30	5,980	4.00	11,040
.00	1,590	1.20	3,540	2.40	6,240	4.20	11,730
.10	1,730	1.30	3,730	2.50	6,500	4.40	12,430
.20	1,870	1.40	3,930	2.60	6,770	4.60	13,150
.30	2,020	1.50	4,130	2.70	7,040	4.80	13,890
.40	2,170	1.60	4,340	2.80	7,320	5.00	14,650
.50	2,330	1.70	4,660	2.90	7,600	5.20	15,420
.60	2,490	1.80	4,780	3.00	7,890	5.40	16,200
.70	2,650	1.90	5,010	3.20	8,480	5.60	17,000
.80	2,820	2.00	5,240	3.40	9,090	5.80	17,800
.90	2,990	2.10	5,480	3.60	9,720		

NOTE.—The above table is applicable only for open-channel conditions. It is based on eleven discharge measurements made during 1904-1906. It is well defined between gage heights -1.0 foot and +5.0 feet. Above gage height 5.40 the rating curve is a tangent, the difference being 400 per tenth.

RATING TABLE FOR FRENCH BROAD RIVER AT SMITH BRIDGE, ASHEVILLE, N. C., FOR 1907.

-0.30	1,130	0.60	2,390	1.50	4,060	2.40	6,230
-.20	1,250	.70	2,550	1.60	4,270	2.50	6,500
-.10	1,380	.80	2,720	1.70	4,490	2.60	6,770
.00	1,510	.90	2,890	1.80	4,720	2.70	7,040
.10	1,650	1.00	3,070	1.90	4,960	2.80	7,320
.20	1,790	1.10	3,250	2.00	5,200	2.90	7,600
.30	1,930	1.20	3,440	2.10	5,450	3.00	7,890
.40	2,080	1.30	3,640	2.20	5,700	3.10	8,180
.50	2,230	1.40	3,850	2.30	5,960	3.20	8,480

NOTE.—The above table is applicable only for open-channel conditions. It is based upon discharge measurements made during 1906-1907. It is well defined.

ESTIMATED MONTHLY DISCHARGE OF FRENCH BROAD RIVER AT SMITH BRIDGE, ASHEVILLE, N. C.  
[Drainage area, 987 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maximum.	Minimum.	Mean.	Second-feet per Square Mile.	Depth in Inches.
1905.					
January.....	7,030	610	1,743	1.77	2.04
February.....	5,460	840	2,255	2.28	2.37
March.....	3,990	1,350	1,996	2.02	2.33
April.....	2,470	1,090	1,536	1.56	1.74
May.....	6,310	1,220	2,637	2.67	3.08
June.....	6,310	1,090	2,211	2.24	2.50
July.....	12,010	1,910	4,178	4.23	4.88
August.....	7,930	1,630	3,320	3.36	3.87
September.....	2,770	960	1,406	1.42	1.58
October.....	3,520	840	1,145	1.16	1.34
November.....	960	840	872	.883	.985
December.....	5,970	840	2,961	3.00	3.46
The year.....	12,010	840	2,188	2.22	30.18

## ESTIMATED MONTHLY DISCHARGE OF FRENCH BROAD RIVER AT SMITH BRIDGE, ASHEVILLE, N. C.—Continued.

[CONTINUED FROM 96" SQUARE INCHES.]

Month.	Discharge in Second-feet.			Run-off.	
	Max.— 1904.	Min.— 1904.	Mean.	Second- feet per Square Mile.	Depth in Inches.
1904.					
January.....	16,500	1,871	6,032	6.10	7.03
February.....	1,124	1,338	1,010	1.05	3.15
March.....	4,771	1,379	1,680	1.44	3.97
April.....	5,464	1,331	1,210	3.25	3.63
May.....	1,542	1,338	1,131	2.04	2.35
June.....	11,776	1,776	4,080	4.13	4.61
July.....	7,400	1,871	1,440	3.40	4.02
August.....	5,465	1,776	1,330	3.37	3.65
September.....	17,435	1,771	1,796	5.98	6.54
October.....	15,500	1,830	1,350	6.13	7.07
November.....	14,600	1,776	1,830	3.37	4.32
December.....	4,340	1,175	1,415	2.44	3.04
The year.....	22,900	1,331	3,900	3.94	53.64
1905.*					
January.....	7,330	1,630	2,360	2.36	2.76
February.....	1,070	1,380	1,730	1.77	1.84
March.....	1,070	1,250	1,730	1.74	2.01
April.....	5,300	1,250	2,010	2.04	2.28
May.....	5,460	1,250	2,100	2.13	2.46
June.....	2,530	1,130	1,510	1.83	2.04

NOTE.—Values for 1906 are excellent.

\*After June the discharge was affected by the building of bridge piers below the station.

## FRENCH BROAD RIVER AT HORSESHOE, N. C.

This station was established October 4, 1904, and was discontinued March 31, 1906. It is located at the steel highway bridge at Horse-shoe, N. C.

## DISCHARGE MEASUREMENTS OF FRENCH BROAD RIVER AT HORSESHOE, N. C.

Date.	Hydrographer.	Width Feet.	Area of Section (Square Feet).	Gage Height (Feet).	Discharge (Second- feet).
1904.					
July 18	B. S. Drane.....	82	241	0.86	396
Aug. 18	do.....	82	285	1.51	529
Oct. 3	do.....	81	192	.51	290
Dec. 7	do.....	81	315	1.91	584
1905.					
Apr. 12	B. S. Drane.....	81	439	3.10	868
June 22	do.....	81	522	3.84	1,160
Aug. 29	do.....	81	488	3.60	1,110
Nov. 11	W. E. Hall.....	81	259	1.37	415
1906.					
Mar. 6	W. E. Hall.....	81	613	4.62	1,410
Mar. 6	do.....	81	613	4.62	1,420

MEAN DAILY GAGE HEIGHT, IN FEET, OF FRENCH BROAD RIVER AT HORSESHOE, N. C.,  
FOR 1904.

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1.....	0.50	0.35	0.60	12.....	0.40	0.50	1.00	23.....	0.30	0.65	0.75
2.....	.50	.35	.55	13.....	.40	1.50	.90	24.....	.30	.65	.75
3.....	.50	.45	.65	14.....	.35	2.00	.80	25.....	.30	.55	.90
4.....	.50	2.45	.75	15.....	.35	1.10	.80	26.....	.35	.55	1.00
5.....	.50	2.10	.75	16.....	.35	.90	.85	27.....	.35	.55	1.55
6.....	.50	1.75	4.60	17.....	.30	.75	.85	28.....	.35	.55	6.00
7.....	.50	1.00	2.20	18.....	.30	.80	.95	29.....	.35	.50	3.30
8.....	.55	.75	1.50	19.....	.30	.70	.85	30.....	.35	.50	2.15
9.....	.45	.60	1.30	20.....	.30	.65	.80	31.....	.35	.....	1.80
10.....	.45	.60	1.10	21.....	.30	.60	.80				
11.....	.40	.55	1.10	22.....	.30	.60	.75				

DAILY GAGE HEIGHT, IN FEET, OF FRENCH BROAD RIVER AT HORSESHOE, N. C., FOR 1905.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	1.60	1.70	4.00	2.40	2.60	3.30	6.80	3.10	3.20	1.80	1.65	1.30
2.....	1.45	1.65	3.90	2.35	2.40	3.00	7.20	2.80	4.00	1.80	1.60	1.30
3.....	1.45	1.60	3.80	2.30	2.40	2.80	4.80	2.80	3.80	1.85	1.55	9.40
4.....	1.40	1.50	3.50	2.25	4.00	2.70	3.70	2.90	3.40	2.40	1.50	6.30
5.....	1.15	1.50	3.40	2.40	4.70	2.70	3.40	3.20	3.20	2.00	1.50	3.50
6.....	1.25	1.90	3.30	3.20	8.40	2.60	3.80	2.90	2.95	1.80	1.45	2.70
7.....	4.70	1.80	3.30	2.70	6.30	2.40	3.80	2.85	2.80	1.75	1.45	2.30
8.....	2.70	2.35	3.30	2.40	5.70	2.35	4.80	2.80	2.75	1.65	1.45	3.60
9.....	2.00	3.40	3.20	2.40	4.80	2.20	3.70	6.50	2.70	1.60	1.40	9.00
10.....	.95	5.00	5.20	2.80	4.60	2.10	3.20	5.50	2.65	1.60	1.40	9.30
11.....	.65	3.80	4.80	2.50	4.00	2.10	6.60	10.20	2.55	6.90	1.40	5.40
12.....	8.40	3.10	4.00	2.60	3.60	2.00	12.50	10.80	2.55	4.40	1.40	4.40
13.....	10.20	6.30	4.20	3.80	3.30	2.00	13.80	10.50	2.50	2.70	1.40	3.60
14.....	7.00	5.30	3.80	3.40	3.20	1.85	15.20	7.50	2.40	2.30	1.35	3.20
15.....	4.50	4.00	3.50	2.90	2.90	2.40	15.00	6.30	2.40	2.10	1.35	3.60
16.....	3.70	3.00	3.30	3.00	5.90	10.20	7.80	5.40	2.35	2.00	1.30	4.60
17.....	3.20	3.00	3.10	2.70	4.80	8.90	6.70	5.30	2.30	2.00	1.25	3.80
18.....	2.70	2.85	3.00	2.50	3.80	6.30	6.00	4.50	2.25	1.90	1.20	3.40
19.....	2.55	2.60	2.90	2.35	3.40	4.20	5.70	4.40	2.35	1.85	1.20	3.10
20.....	2.50	2.80	2.80	2.30	3.20	4.40	5.30	4.40	2.30	1.80	1.45	3.20
21.....	2.35	8.90	3.30	2.25	3.00	4.90	5.00	4.30	2.30	1.80	1.70	7.30
22.....	2.20	6.70	3.70	2.20	3.30	3.90	5.30	4.60	2.15	1.80	1.45	5.30
23.....	2.10	6.70	3.20	2.15	3.20	3.80	4.60	5.60	2.00	1.75	1.35	4.60
24.....	2.00	6.00	3.00	2.10	4.00	3.30	4.20	6.60	2.00	1.70	1.30	4.70
25.....	1.80	5.40	3.10	2.10	3.30	2.75	4.00	6.00	1.95	1.65	1.30	4.40
26.....	2.50	5.00	2.90	2.90	3.50	2.70	3.20	5.40	1.90	1.85	1.30	3.80
27.....	3.40	4.60	2.75	2.60	5.80	2.75	3.40	4.50	1.85	1.95	1.30	3.50
28.....	3.60	4.40	2.50	2.40	6.30	2.70	4.10	4.00	1.85	1.80	1.25	3.20
29.....	2.40	.....	2.50	2.30	4.50	2.40	3.80	3.60	1.80	1.75	1.25	5.10
30.....	2.20	.....	2.50	3.20	4.20	3.20	3.40	3.40	1.80	1.70	1.30	4.40
31.....	1.80	.....	2.60	.....	3.60	.....	3.40	3.30	.....	1.70	.....	4.50



DAILY GAGE HEIGHT, IN FEET, OF FRENCH BROAD RIVER AT HORSESHOE, N. C., FOR 1906.

Day.	Jan.	Feb.	Mar.	Day.	Jan.	Feb.	Mar.
1.....	3.60	6.70	3.60	17.....	4.40	4.00	5.50
2.....	3.40	6.30	3.40	18.....	4.20	3.80	4.90
3.....	7.10	5.70	3.70	19.....	4.20	3.80	7.00
4.....	12.70	5.50	5.50	20.....	3.90	3.60	9.90
5.....	13.00	5.20	5.40	21.....	3.80	3.80	6.80
6.....	7.50	5.00	4.80	22.....	8.20	5.50	5.90
7.....	5.90	4.90	4.40	23.....	16.00	4.20	5.50
8.....	5.40	4.50	4.60	24.....	16.00	4.00	4.90
9.....	5.00	4.60	4.80	25.....	14.00	3.90	4.80
10.....	4.50	4.40	4.50	26.....	10.00	3.80	4.60
11.....	4.20	4.20	4.30	27.....	7.80	3.80	4.50
12.....	5.50	4.40	4.00	28.....	7.20	3.70	4.60
13.....	5.00	4.40	3.60	29.....	7.10	.....	4.50
14.....	5.50	4.30	4.00	30.....	7.00	.....	7.80
15.....	4.80	4.20	7.30	31.....	6.90	.....	8.80
16.....	4.60	4.20	7.20				

RATING TABLE FOR FRENCH BROAD RIVER AT HORSESHOE, N. C., FOR 1904-1906.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
0.30	242	1.50	473	2.70	785	3.90	1,165
.40	258	1.60	496	2.80	815	4.00	1,200
.50	275	1.70	519	2.90	845	4.20	1,270
.60	292	1.80	542	3.00	875	4.40	1,340
.70	310	1.90	566	3.10	905	4.60	1,410
.80	328	2.00	590	3.20	935	4.80	1,480
.90	347	2.10	615	3.30	965	5.00	1,550
1.00	367	2.20	640	3.40	995	5.20	1,630
1.10	387	2.30	665	3.50	1,025	5.40	1,710
1.20	408	2.40	695	3.60	1,060	6.00	1,950
1.30	429	2.50	725	3.70	1,095		
1.40	451	2.60	755	3.80	1,130		

NOTE.—The above table is applicable only for open-channel conditions. It is based on eight discharge measurements made during 1904-1906. It is well defined between gage heights 0.5 foot and 5.0 feet. Above 5.0 feet the rating curve is a tangent, the difference being 40 per tenth.

MONTHLY DISCHARGE OF FRENCH BROAD RIVER AT HORSESHOE, N. C.  
[Drainage area, 325 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maximum.	Minimum.	Mean.	Second-feet per Square Mile.	Depth in Inches.
1904.					
October.....	275	242	256	0.788	0.91
November.....	710	250	346	1.06	1.18
December.....	1,950	284	480	1.48	1.71
1905.					
January.....	3,630	301	918	2.82	3.25
February.....	3,110	473	1,190	3.66	3.81
March.....	1,630	725	994	3.06	3.53
April.....	1,130	615	751	2.31	2.58
May.....	2,910	695	1,280	3.94	4.54
June.....	3,630	554	1,050	3.23	3.60
July.....	5,630	935	1,960	6.03	6.95
August.....	3,870	815	1,610	4.95	5.71
September.....	1,200	542	732	2.25	2.51
October.....	2,310	496	643	1.98	2.28
November.....	519	408	449	1.38	1.54
December.....	3,310	429	1,400	4.31	4.97
The year.....	5,630	301	1,080	3.33	45.27
1906.					
January.....	5,950	995	2,380	7.32	8.44
February.....	2,230	1,060	1,390	4.28	4.46
March.....	3,510	995	1,700	5.23	6.03

NOTE.—Values for 1904–1906 are good.

FRENCH BROAD RIVER AT ROSMAN, N. C.

This station was established on May 7, 1907. It is located at a wagon bridge, about 800 feet east of the railroad station at Rosman.

The vertical gage is attached to the right-bank abutment or the planking extending upstream from same.

Discharge measurements are made from a two-truss wooden wagon bridge. Both banks may overflow at high stages. The current is good and the rating should be constant.

The bench mark is a nail in the downstream end of the right-bank bent cap, inside toward the river; elevation 13.03 feet.

DISCHARGE MEASUREMENTS OF FRENCH BROAD RIVER AT ROSMAN, N. C., FOR 1907.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second-feet).
May 7	Warren E. Hall.....	71	297	0.79	2.31	235
July 16	.....do.....	67	258	.51	2.00	132
Sept. 23	.....do.....	70	337	1.59	2.90	538
Sept. 23	.....do.....	70	340	1.39	2.83	474
Sept. 23	.....do.....	70	331	1.33	2.78	440
Dec. 16	.....do.....	63	259	1.12	2.50	289

## DAILY (GAGE HEIGHT, IN FEET, OF FRENCH BROAD RIVER AT ROSMAN, N. C., FOR 1907-1908.

1907.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)								
1.....		3.20	1.90	1.90	1.90	2.10	1.90	2.10
2.....		2.40	1.90	1.90	1.90	2.10	2.60	2.10
3.....		2.20	1.90	1.90	1.90	2.00	2.30	2.00
4.....		2.10	1.90	1.90	1.90	2.00	2.20	2.00
5.....		2.10	1.90	1.90	1.90	2.00	2.00	2.00
6.....		2.10	1.90	1.80	1.90	2.00	2.00	2.00
7.....	2.30	2.00	1.90	1.80	1.80	2.00	1.90	2.00
8.....	2.20	2.20	1.90	1.80	1.90	2.10	1.90	2.00
9.....	2.20	2.10	1.90	1.80	1.90	2.00	1.90	2.60
10.....	2.10	2.10	1.90	1.80	1.90	1.90	2.30	3.30
11.....	2.30	2.00	2.00	2.00	1.90	1.90	2.00	2.80
12.....	2.10	2.00	2.00	1.90	1.90	1.90	2.00	2.60
13.....	2.10	2.10	2.00	1.90	1.80	1.90	1.90	2.40
14.....	2.10	2.10	2.00	1.90	1.80	1.90	1.90	3.40
15.....	2.20	2.00	2.00	2.00	1.80	1.90	1.90	2.80
16.....	2.10	2.00	2.20	2.00	1.80	1.90	1.90	2.50
17.....	2.10	2.00	2.00	1.90	1.80	1.90	1.90	2.20
18.....	2.10	2.00	2.00	2.00	1.80	1.90	2.80	2.20
19.....	2.10	2.00	2.00	2.00	1.80	1.90	2.20	2.20
20.....	2.10	2.00	2.00	2.00	1.80	1.90	2.20	2.20
21.....	2.00	2.00	1.90	1.90	1.80	1.90	3.60	2.10
22.....	2.00	2.00	1.90	2.10	2.00	1.90	2.10	1.90
23.....	2.00	2.00	1.90	2.10	4.20	1.90	2.70	4.20
24.....	2.00	2.00	1.90	2.10	2.20	1.90	3.10	3.00
25.....	2.00	2.00	1.90	2.00	2.10	1.80	2.50	2.80
26.....	2.30	2.00	1.90	1.90	2.00	1.80	2.40	2.50
27.....	2.10	2.00	1.90	1.90	2.00	1.90	2.30	2.50
28.....	2.00	2.00	2.50	1.90	2.20	1.90	2.30	2.20
29.....	2.00	2.00	2.00	1.90	2.40	1.90	2.20	2.20
30.....	2.00	1.90	2.00	1.90	2.20	1.90	2.10	3.90
31.....	2.25		1.90	1.90		1.90		2.50

1908.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
(Day)										
1.....	2.80	2.80	2.70	2.50	2.90	2.30	2.20	2.10	2.40	2.00
2.....	2.60	2.60	2.70	2.40	2.80	2.30	2.30	2.00	2.40	2.00
3.....	2.40	2.50	2.80	2.20	2.70	2.40	2.40	2.00	2.30	2.00
4.....	2.00	2.50	2.80	2.00	2.70	2.70	2.90	2.00	2.30	2.00
5.....	2.60	2.20	2.80	2.50	2.70	2.70	3.00	2.60	2.90	2.00
6.....	2.60	2.20	2.60	2.50	2.70	2.70	2.80	2.40	2.60	1.90
7.....	2.60	2.40	2.60	2.50	3.30	2.40	2.70	2.40	2.60	2.00
8.....	2.60	2.40	2.50	2.50	2.90	2.40	2.50	2.40	2.40	2.20
9.....	2.40	2.30	2.40	2.40	2.80	2.40	2.30	2.10	2.40	2.60
10.....	2.40	2.30	2.40	2.40	2.60	2.40	2.30	2.10	2.20	2.90
11.....	2.40	2.60	2.40	2.40	2.60	2.40	2.30	2.10	2.20	2.30
12.....	3.90	2.90	2.80	2.20	2.60	2.40	2.30	2.10	2.10	2.20
13.....	3.00	3.00	2.70	2.20	2.60	2.40	2.20	2.00	2.00	2.00
14.....	2.90	3.30	2.70	2.50	2.60	2.40	2.20	2.00	2.00	2.00
15.....	2.90	7.30	2.60	3.30	2.60	2.70	2.20	2.00	2.00	2.00
16.....	2.80	3.90	2.40	2.90	2.70	2.40	2.20	2.00	2.00	2.00
17.....	2.60	3.50	2.40	2.90	2.70	2.40	2.20	2.00	2.00	2.00
18.....	2.60	3.00	2.40	2.70	2.70	2.40	2.20	2.00	2.00	2.00
19.....	2.80	3.00	2.60	2.60	2.60	2.40	2.10	2.00	2.00	2.00
20.....	2.50	2.90	2.60	2.60	2.60	2.40	2.10	2.30	2.00	2.00
21.....	2.50	2.70	2.90	2.50	2.60	2.30	2.10	2.70	2.00	2.00
22.....	2.50	2.70	2.70	2.50	2.60	2.30	2.10	3.00	2.00	2.20
23.....	2.50	2.70	3.00	2.50	2.60	2.30	2.10	2.70	2.00	2.90
24.....	2.40	2.60	3.40	2.40	2.60	2.30	2.10	3.50	2.00	2.60
25.....	2.00	2.90	2.90	4.70	2.60	2.30	2.30	3.80	2.00	2.40
26.....	2.80	3.00	2.70	3.40	2.80	2.30	2.20	3.00	1.90	2.20
27.....	2.80	2.90	2.70	2.90	2.50	2.30	2.20	2.90	2.10	2.90
28.....	2.40	2.80	2.60	2.70	2.50	2.30	2.20	2.80	2.20	4.40
29.....	2.40	2.70	2.50	2.70	2.50	2.30	2.10	2.50	2.00	3.00
30.....	2.40		2.60	2.00	2.50	2.30	2.10	2.40	2.00	3.00
31.....	2.60		2.80		2.30		2.10	2.40		2.90

RATING TABLE FOR FRENCH BROAD RIVER AT ROSMAN, N. C., FOR 1907 AND 1908.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.80	90	2.15	175	2.50	300	2.85	480
1.85	100	2.20	190	2.55	322	2.90	510
1.90	110	2.25	206	2.60	345	2.95	540
1.95	121	2.30	223	2.65	370	3.00	570
2.00	133	2.35	241	2.70	395		
2.05	146	2.40	260	2.75	422		
2.10	160	2.45	280	2.80	450		

## NOLICHUCKY RIVER NEAR GREENEVILLE, TENN.

This station was established May 7, 1903. It is located at Jones' bridge, 5 miles southeast of Greeneville, Tenn., which is the nearest railroad station.

The channel is straight for about 700 feet above and below the station. The right bank is high, but at flood stages part of the water will pass around the end of the bridge. The left bank is high and can never overflow. The section is regular, and the bed is composed of gravel and is not subject to change. The velocity is uniform and well distributed except at extreme low water.

Discharge measurements are made from the downstream side of the two-span steel highway bridge. The initial point for soundings is the left end of the top bar of the downstream handrail.

A standard chain gage is bolted to the lower chord of the bridge on the upstream side midway between the second and third intermediate posts from the right bank; length of chain, 33.63 feet. The gage is read once each day by B. H. Jones. Bench marks were established as follows: (1) A standard iron bench-mark post of the United States Geological Survey, set on the left bank just below the bridge, 5.5 feet downstream from the left end of the bridge; elevation, 26.80 feet. (2) The upper outer edge of the outer eyebar of the lower chord of the bridge, 3.6 feet to the right of the center of the third intermediate post from the right bank, marked by a spot of white paint and the letters "B. M."; elevation, 32.03 feet. Elevations refer to datum of the gage.

DISCHARGE MEASUREMENTS OF NOLICHUCKY RIVER NEAR GREENEVILLE, TENN., FOR 1903.

Date.	Hydrographer.	Area of Section (Square Feet).	Gage Height (Feet).	Discharge (Second-feet).
May 7	E. W. Myers.....	1,075	1.48	2,358
May 7	.....do.....	1,075	1.48	2,351
July 1	B. S. Drane.....	870	.61	866
Aug. 13	M. R. Hall.....	804	.47	866
Sept. 3	B. S. Drane.....	765	.19	588
Oct. 15	.....do.....	717	.01	400
Oct. 15	.....do.....	709	.00	383

## DISCHARGE MEASUREMENTS OF NOLICHUCKY RIVER NEAR GREENEVILLE, TENN.—Continued.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1904.						
Feb. 24	B. S. Drane	275	1,015	1.57	1.11	1,592
Feb. 27	do.	274	1,157	2.21	1.69	2,529
Mar. 23	do.	275	1,558	3.45	3.26	5,383
Mar. 23	do.	275	1,732	3.84	3.66	6,657
Mar. 24	do.	311	2,008	3.99	4.67	8,018
May 3	do.	133	987	1.56	1.11	1,542
July 9	J. M. Giles	264	806	1.07	.48	859
Aug. 9	B. S. Drane	275	911	1.24	.81	1,129
Aug. 9	do.	275	914	1.34	.82	1,222
Oct. 17	do.	275	649	.52	— .12	340
Oct. 17	do.	275	646	.55	— .10	355
1905.						
Feb. 7	B. S. Drane	264	916	1.39	0.87	1,271
Feb. 7	do.	264	915	1.44	.87	1,323
May 15	W. E. Hall	266	1,263	2.76	2.19	3,486
June 15	B. S. Drane	265	818	1.13	.55	924
Aug. 23	W. E. Hall	266	983	1.51	1.01	1,487
Dec. 25	F. A. Murray	267	1,066	2.01	1.40	2,182
1906.						
May 25	O. P. Hall	267	764	----	0.60	1,080
Oct. 20	F. A. Murray	275	1,490	----	3.21	6,020
Oct. 20	do.	275	1,460	----	3.06	5,770

## DAILY GAGE HEIGHT, IN FEET, OF NOLICHUCKY RIVER NEAR GREENEVILLE, TENN., FOR 1903.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....		1.00	0.60	0.70	0.20	0.00	0.00	0.10
2.....		3.00	.50	.70	.20	.00	.00	.04
3.....		1.80	.50	.80	.20	.00	.00	.08
4.....		1.70	.70	1.00	.20	.00	.01	.03
5.....		1.30	.60	.90	.20	.00	.16	.04
6.....		1.80	.70	.80	.10	.00	.15	.17
7.....		2.80	.80	.60	.10	.05	.01	.00
8.....		2.10	.70	.50	.10	.10	.00	.01
9.....	1.40	1.60	.60	.40	.10	.20	.08	.05
10.....	1.30	1.40	.50	.30	.10	.50	.05	.14
11.....	1.30	1.90	.60	.60	.30	.30	.01	.10
12.....	1.20	1.50	.60	.70	.20	.10	.06	— .01
13.....	1.30	1.30	1.00	.50	.20	.20	.05	.10
14.....	1.30	1.10	1.70	.40	.10	.05	.10	.30
15.....	1.40	1.00	1.10	.40	.10	.06	.09	.06
16.....	1.30	1.00	.70	.50	.00	.00	.10	.09
17.....	1.10	.90	.70	.60	.10	.00	.50	— .09
18.....	1.10	.90	.70	1.00	.80	.00	1.60	.00
19.....	1.00	.80	.70	.70	.40	.10	.80	— .01
20.....	1.00	.80	.60	.70	.20	.13	.50	.70
21.....	1.00	.80	.50	.50	.20	.00	.20	.90
22.....	.90	1.00	.50	.40	.10	.01	.20	.60
23.....	.90	.80	.40	.40	.10	.00	.20	.40
24.....	.90	1.10	.40	.30	.10	.00	.20	.19
25.....	.80	.80	.40	.30	.10	— .01	.01	.30
26.....	.80	.70	.50	.30	.10	— .03	.12	.50
27.....	.70	.70	.40	.20	.00	.00	.10	.40
28.....	.70	.80	.30	.20	.00	— .01	.04	.30
29.....	.70	.80	.30	.20	.00	— .05	.06	.30
30.....	.90	.80	.50	.20	.00	— .05	.05	.30
31.....	1.10	-----	1.00	.20	-----	.00	-----	.19

DAILY GAGE HEIGHT, IN FEET, OF NOLICHUCKY RIVER NEAR GREENEVILLE, TENN., FOR 1904-5.

1904.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	0.11	0.20	1.40	1.40	1.40	1.75	1.30	0.30	0.25	0.00	-0.10	0.20
2.....	.12	.20	1.40	1.40	1.25	1.95	.90	1.45	.50	-.05	-.05	.25
3.....	.30	.18	1.30	1.25	1.15	1.55	.65	.95	.65	-.10	-.05	.30
4.....	.18	.30	1.20	1.05	1.20	1.15	.50	.65	.60	-.05	.00	.30
5.....	.06	.20	1.20	1.00	1.40	.95	.70	.50	.50	-.10	.25	.60
6.....	.10	.15	1.00	.95	1.20	.85	.50	.65	.40	-.10	.55	1.05
7.....	.04	.30	3.10	1.00	1.05	.90	.50	.60	.30	-.10	.30	1.20
8.....	.12	1.80	3.70	1.00	.90	.80	.45	.70	.25	.00	.10	.75
9.....	.11	1.40	2.40	.95	3.70	.75	.50	.80	.20	-.05	.05	.50
10.....	.09	.90	1.80	1.15	2.30	.60	1.00	.65	.15	-.05	.00	.45
11.....	.12	.70	1.65	.95	1.70	.85	.65	.75	.15	-.05	.00	.50
12.....	.20	.60	1.60	.90	1.45	.75	.85	1.05	.15	-.05	.00	.55
13.....	.30	.40	1.40	.90	1.35	.70	.65	.80	.15	-.10	.10	.50
14.....	.30	.40	1.25	.80	1.15	.55	.50	.65	.20	-.10	.55	.35
15.....	.19	.40	1.25	.75	1.05	.50	.35	.50	.10	-.10	.55	.20
16.....	.10	.60	1.10	.80	1.00	.40	.30	.65	.10	-.10	.30	.30
17.....	.30	.40	.95	1.20	.90	.45	.35	.60	.05	-.10	.25	.35
18.....	.70	.30	.95	1.00	.85	.55	.35	.55	.05	-.10	.30	.30
19.....	.50	.40	1.05	.85	.95	.65	.25	.40	.05	-.10	.20	.30
20.....	.30	.50	1.00	.80	.85	.75	.20	.55	.05	-.10	.15	.20
21.....	.30	.60	.95	.80	.80	.75	.20	.75	.05	-.10	.20	.10
22.....	.30	.60	2.10	.80	.75	.70	.70	.90	.05	-.10	.20	.20
23.....	1.00	1.70	2.10	.75	.65	.55	.45	.65	.00	-.15	.25	.15
24.....	1.00	1.20	5.00	.75	.60	.45	.30	.75	.00	-.10	.40	.15
25.....	.90	.90	3.30	.80	.60	.40	.25	1.00	.00	-.10	.30	.50
26.....	.50	.90	2.50	.75	.60	.50	.90	.55	.00	-.10	.20	.50
27.....	.40	1.50	2.40	1.50	.70	.85	.70	.45	.00	-.10	.15	.50
28.....	.30	2.20	2.30	2.25	.65	.60	.40	.45	.00	-.05	.10	.70
29.....	.30	1.60	1.90	1.90	.55	1.95	.45	.35	.00	-.05	.05	1.35
30.....	.30	-----	1.70	1.65	.55	1.55	.50	.30	.00	-.05	.20	.80
31.....	.20	-----	1.50	-----	.60	-----	.45	.25	.00	-.10	-----	.55
1905.												
1.....	0.55	0.55	1.40	0.80	1.10	1.05	0.70	0.95	0.65	0.25	0.25	0.20
2.....	.55	.60	1.35	.70	1.00	.95	.70	.75	.65	.20	.25	.20
3.....	.70	.60	1.35	.70	.80	.85	.85	.70	.80	.35	.25	3.40
4.....	.90	.40	1.20	.70	.85	.70	1.05	.70	.15	.35	.20	2.60
5.....	.70	.50	1.20	.70	.90	.70	2.30	.70	.65	.40	.20	1.30
6.....	.65	.70	1.30	1.25	1.10	.65	.20	.70	.60	.35	.25	.80
7.....	1.15	.90	1.20	1.55	3.40	.65	1.00	.70	.50	.25	.30	.65
8.....	1.10	1.00	1.30	1.25	2.80	.65	.80	1.15	.50	.20	.25	.60
9.....	.70	2.60	1.40	1.35	2.40	.65	.70	1.75	.45	.25	.25	.80
10.....	.70	2.40	1.90	2.20	1.75	.55	.65	1.80	.45	.20	.20	2.60
11.....	.80	1.90	2.40	1.75	1.85	.50	.65	2.10	.40	.30	.20	1.60
12.....	1.30	1.50	1.85	2.70	1.70	.50	5.50	4.40	.40	.80	.15	1.15
13.....	4.00	1.50	1.70	2.40	1.60	.55	6.10	3.50	.60	.60	.20	.95
14.....	2.40	2.20	1.55	1.90	2.60	.70	3.10	2.80	.50	.35	.20	.80
15.....	1.75	1.50	1.40	1.55	2.20	.60	2.30	2.10	.40	.30	.15	.80
16.....	1.15	1.25	1.20	1.40	4.20	.50	1.80	2.05	.40	.25	.15	1.00
17.....	.95	1.20	1.20	1.25	3.60	2.60	1.85	1.75	.30	.25	.20	1.00
18.....	1.00	1.10	1.10	1.10	2.70	3.10	1.45	1.50	.35	.25	.20	.90
19.....	1.05	1.00	1.05	1.00	2.00	1.75	2.70	1.40	.35	.25	.15	.80
20.....	.95	2.10	1.05	.95	1.75	1.55	1.70	1.25	.35	.30	.20	.75
21.....	.85	4.20	1.10	.90	1.50	1.40	1.35	1.20	.35	.30	.25	.85
22.....	.80	3.60	1.20	.95	1.35	1.20	1.35	1.15	.35	.30	.25	1.80
23.....	.70	3.10	1.05	.90	1.65	1.10	1.45	1.00	.35	.30	.20	1.35
24.....	.60	2.40	.95	.80	1.70	1.05	1.25	1.00	.30	.25	.15	1.75
25.....	.65	2.00	.90	.75	1.40	.90	1.15	1.05	.25	.25	.15	1.50
26.....	.30	1.95	1.00	.70	1.25	.85	1.00	1.25	.25	.35	.15	1.15
27.....	.25	1.70	.90	.80	1.30	.85	.90	1.00	.20	.55	.20	1.00
28.....	.25	1.50	.80	1.00	1.30	.75	.90	.90	.20	.50	.20	1.15
29.....	.45	-----	.80	.90	1.90	.70	1.20	.70	.25	.40	.15	.80
30.....	.55	-----	.80	1.15	1.25	.70	1.15	.70	.20	.30	.20	.80
31.....	.55	-----	.85	-----	1.25	-----	1.15	.65	-----	.30	-----	.70

## DAILY GAGE HEIGHT, IN FEET, OF NOLICHUCKY RIVER NEAR GREENEVILLE, TENN., FOR 1906-7.

1906.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	0.80	2.35	1.00	2.00	0.95	0.60	0.70	1.10	3.00	2.55	1.00	1.15
2.....	.55	2.10	1.00	1.70	1.00	.70	.70	1.20	2.25	2.60	.95	1.10
3.....	.55	1.85	1.05	1.50	1.05	.95	.60	2.70	1.90	3.40	.95	1.05
4.....	3.80	1.65	2.15	1.35	1.50	.70	.70	2.00	3.20	4.40	.90	1.05
5.....	2.00	1.60	1.50	1.25	3.10	.70	1.00	2.10	3.25	2.90	.90	1.00
6.....	1.45	1.50	1.35	1.25	3.00	.60	.70	1.50	2.65	2.40	.85	1.00
7.....	1.15	1.35	1.20	1.40	2.95	.60	.75	1.35	2.10	2.50	.80	1.00
8.....	1.00	1.25	1.15	1.25	2.45	.60	.95	1.15	2.10	2.00	.80	1.00
9.....	1.00	1.20	1.25	1.20	1.90	.50	.90	1.05	1.90	1.90	.80	.90
10.....	.85	1.15	1.15	1.40	1.65	.60	1.10	.95	1.50	1.65	.75	.90
11.....	.70	1.10	1.00	1.50	1.45	.55	.75	.80	1.40	1.50	.75	1.00
12.....	.90	1.05	.95	1.25	1.30	.50	.60	.75	1.80	1.35	1.10	1.20
13.....	1.35	1.20	.95	1.15	1.20	1.00	.55	.80	1.35	1.30	.95	1.00
14.....	1.15	1.30	.90	1.10	1.10	3.50	.50	1.30	1.30	1.25	.80	.95
15.....	1.70	1.35	1.00	5.00	1.00	1.50	.55	1.90	1.20	1.20	.75	.90
16.....	1.40	1.45	3.20	2.80	1.00	2.90	1.90	1.65	1.00	1.15	.75	.90
17.....	1.30	1.30	2.20	2.10	.90	2.00	1.80	2.60	1.00	1.30	.75	.90
18.....	1.20	1.15	1.75	1.80	.90	1.50	1.85	2.20	1.20	1.50	1.00	1.35
19.....	1.25	1.10	1.55	1.60	.85	1.20	1.35	1.80	8.20	3.50	9.50	1.35
20.....	1.20	1.05	1.70	1.45	.80	1.10	1.70	1.65	4.00	3.20	5.60	1.20
21.....	1.10	1.00	1.70	1.30	.80	1.00	1.90	1.60	2.70	3.00	3.20	1.30
22.....	1.00	1.25	1.50	1.25	.70	.95	1.50	1.70	2.60	1.90	2.35	1.35
23.....	15.20	1.50	1.40	1.20	.70	.95	1.50	1.50	2.20	1.75	2.00	1.25
24.....	4.60	1.30	1.30	1.10	.65	.80	1.30	1.35	1.90	1.65	1.75	1.00
25.....	3.00	1.20	1.35	1.00	.60	1.90	1.00	1.20	1.50	1.50	1.60	.75
26.....	2.50	1.20	1.35	1.00	.60	1.50	1.20	1.05	1.50	1.40	1.50	.80
27.....	2.50	1.30	1.35	.95	.90	1.05	1.80	2.20	1.40	1.30	1.40	1.00
28.....	2.30	1.20	1.40	.90	1.45	.80	1.10	2.10	2.25	1.20	1.30	4.30
29.....	2.25		1.40	.90	.95	.70	1.30	2.80	2.55	1.15	1.25	4.00
30.....	2.30		1.45	.85	.80	.65	1.25	4.10	3.20	1.10	1.20	2.90
31.....	2.30		2.50		.70		1.10	5.40		1.05		2.30
1907.												
1.....	2.80	0.70	1.35	0.90	1.20	0.80	1.10	0.75	0.30	0.70	0.30	0.70
2.....	2.25	.85	1.90	.90	1.20	3.50	.95	.65	.30	.60	.30	.65
3.....	1.85	.90	2.00	.75	1.10	3.20	1.05	.55	.50	.60	.40	.60
4.....	1.70	.90	1.90	.70	1.50	2.90	1.00	.50	.60	.50	.55	.55
5.....	1.60	1.10	1.70	.70	1.65	2.10	.80	.50	.55	1.20	.40	.50
6.....	1.45	1.20	1.20	.75	1.40	1.70	.75	.45	.45	1.05	.40	.45
7.....	1.40	1.00	1.10	1.50	1.90	1.40	.70	.55	.40	.80	.40	.40
8.....	1.30	.90	1.20	1.40	1.70	1.55	.65	.75	.40	.70	.35	.45
9.....	1.25	.90	1.40	1.50	1.50	3.60	.60	1.00	.60	.65	.35	.50
10.....	1.20	.85	1.40	1.50	1.40	2.75	.60	.75	.55	.60	.35	.65
11.....	1.15	.85	2.80	1.30	1.30	2.25	.55	.55	.50	.50	.30	1.60
12.....	1.15	.80	2.15	1.40	1.25	2.00	.65	.50	.80	.50	.40	1.15
13.....	1.05	.70	1.75	1.20	1.15	1.70	1.80	.45	.50	.45	.35	.95
14.....	1.00	.70	1.60	1.10	1.10	2.40	1.45	.40	.45	.40	.30	.80
15.....	1.00	.70	1.70	1.00	1.00	2.00	1.55	.35	.35	.40	.30	.90
16.....	1.00	.65	1.75	1.00	.95	1.70	1.40	.30	.30	.40	.30	1.40
17.....	.95	.65	1.50	1.00	.90	1.50	1.15	.35	.35	.35	.60	1.10
18.....	.95	.65	1.35	1.00	.85	1.15	1.20	.50	.35	.35	.60	.90
19.....	.95	.65	1.30	1.20	.80	1.10	2.15	.75	.40	.40	.65	.70
20.....	.90	.65	1.20	1.70	.75	1.00	1.20	.50	.50	.35	.70	.70
21.....	.90	.60	1.15	1.40	.70	1.00	1.00	.55	.95	.35	.60	.65
22.....	.80	.60	1.05	1.20	.70	.95	.85	.50	.90	.35	.65	.65
23.....	.80	.55	1.00	1.50	.65	1.00	.75	.65	3.00	.30	.90	.80
24.....	.80	.55	.95	2.20	.65	1.10	.65	.90	3.45	.30	1.60	2.20
25.....	.75	.75	.90	1.70	.65	1.20	.60	1.00	1.75	.30	1.70	1.45
26.....	.75	1.35	.85	1.20	.85	1.00	.60	.90	1.20	.30	1.30	1.10
27.....	.80	1.30	.80	1.40	.85	1.10	.85	.80	.90	.30	1.00	1.00
28.....	.75	1.35	.80	1.55	.65	.90	.65	.70	.80	.30	.90	.95
29.....	.65		.75	1.35	.65	1.45	.55	.45	.80	.30	.85	.90
30.....	.65		.75	1.35	.55	1.45	1.50	.40	.80	.30	.75	1.50
31.....	.65		.75		.55		.90	.40		.30		3.10

DAILY GAGE HEIGHT, IN FEET, OF NOLICHUCKY RIVER NEAR GREENEVILLE, TENN., FOR 1908.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1.....	1.90	0.90	1.80	1.45	1.55	1.10	.50	.90	.90	0.35
2.....	1.50	.85	2.20	1.65	1.40	1.00	.80	.90	.80	.25
3.....	1.30	.80	2.10	2.10	1.30	.90	.65	.65	.75	.20
4.....	1.15	.95	1.95	1.55	1.20	1.10	1.00	.65	.65	.20
5.....	2.30	1.10	1.80	1.45	1.15	1.25	1.00	.75	.60	.20
6.....	2.20	1.10	2.30	1.40	1.15	1.00	1.25	.85	.80	.20
7.....	1.75	1.20	2.25	1.35	1.40	.90	2.00	1.25	.70	.15
8.....	1.60	1.20	2.20	1.25	2.10	1.10	4.30	1.00	.70	.15
9.....	1.35	1.10	1.90	1.20	1.55	.95	2.25	1.25	.75	.20
10.....	1.20	1.10	1.70	1.20	1.40	.80	1.90	1.10	.60	.75
11.....	1.00	1.35	1.55	1.10	1.30	.90	1.40	.85	.55	1.80
12.....	9.10	1.75	2.00	2.10	1.15	.80	1.05	.80	.50	.90
13.....	4.20	2.65	2.70	1.00	1.15	.70	.90	.60	.45	.65
14.....	2.80	3.20	2.20	1.00	1.10	.70	.90	.50	.45	.50
15.....	2.20	4.90	1.90	.95	1.10	2.20	1.00	.50	.40	.45
16.....	1.95	4.40	1.80	1.40	1.00	2.00	.80	.45	.40	.40
17.....	1.85	3.80	1.65	2.20	1.10	1.30	.80	.45	.35	.30
18.....	1.65	2.80	1.60	1.75	1.10	1.00	.70	.55	.35	.30
19.....	1.50	2.00	1.65	1.60	1.30	.90	.70	.55	.30	.30
20.....	1.40	1.85	1.65	1.45	1.90	.80	.55	1.15	.30	.25
21.....	1.30	1.65	2.60	1.25	2.00	.80	.55	.65	.30	.25
22.....	1.25	1.55	2.60	1.15	1.60	.90	.50	.70	.30	.25
23.....	1.25	1.40	2.50	1.10	1.30	1.00	.70	.90	.30	.40
24.....	1.25	1.30	4.00	1.00	1.30	.95	1.00	1.00	.25	6.80
25.....	1.00	1.20	3.30	1.15	1.00	.70	.70	1.45	.20	2.50
26.....	1.05	1.40	2.50	5.00	1.00	1.00	.60	5.50	.20	2.00
27.....	1.35	1.20	2.10	2.80	1.30	.70	.50	2.50	.20	1.45
28.....	1.30	1.20	1.90	2.00	1.35	.55	1.00	1.70	.20	1.20
29.....	1.10	1.10	1.70	1.80	1.35	.55	1.25	1.40	.30	2.30
30.....	1.10	.....	1.65	1.55	2.10	.50	1.20	1.20	.50	3.50
31.....	.90	.....	1.50	.....	1.90	.....	1.40	1.00	.....	2.45

RATING TABLE FOR NOLICHUCKY RIVER NEAR GREENEVILLE, TENN., FROM MAY 9 TO DECEMBER 31, 1903.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
-0.1	312	.7	1,075	1.5	2,395	2.3	4,030
.0	388	.8	1,200	1.6	2,595	2.4	4,235
+ .1	469	.9	1,335	1.7	2,800	2.5	4,440
.2	557	1.0	1,485	1.8	3,005	2.6	4,645
.3	649	1.1	1,645	1.9	3,210	2.7	4,850
.4	746	1.2	1,815	2.0	3,415	2.8	5,055
.5	850	1.3	2,000	2.1	3,620	2.9	5,260
.6	960	1.4	2,195	2.2	3,825	3.0	5,465



RATING TABLE FOR NOLICHUCKY RIVER NEAR GREENEVILLE, TENN., FOR 1904.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
-0.15	320	0.8	1,195	1.9	2,780	3.0	4,860
— .1	355	.9	1,305	2.0	2,955	3.2	5,270
— .05	390	1.0	1,420	2.1	3,135	3.4	5,690
.0	430	1.1	1,545	2.2	3,315	3.6	6,100
.1	510	1.2	1,675	2.3	3,500	3.8	6,530
.2	595	1.3	1,815	2.4	3,685	4.0	6,960
.3	685	1.4	1,965	2.5	3,875	4.2	7,390
.4	780	1.5	2,120	2.6	4,070	4.4	7,820
.5	880	1.6	2,280	2.7	4,265	4.6	8,250
.6	980	1.7	2,445	2.8	4,460	4.8	8,680
.7	1,085	1.8	2,610	2.9	4,660	5.0	9,130

NOTE.—The above table is applicable only for open-channel conditions. It is based upon eighteen discharge measurements made during 1903 and 1904. It is well defined between gage heights —0.15 foot and 1.10 feet.

RATING TABLE FOR NOLICHUCKY RIVER NEAR GREENEVILLE, TENN., FOR 1905.

0.00	430	1.20	1,770	2.40	3,940	4.20	7,690
.10	515	1.30	1,930	2.50	4,140	4.40	8,130
.20	600	1.40	2,100	2.60	4,340	4.60	8,570
.30	690	1.50	2,270	2.70	4,540	4.80	9,010
.40	780	1.60	2,440	2.80	4,740	5.00	9,450
.50	880	1.70	2,620	2.90	4,940	5.20	9,890
.60	990	1.80	2,800	3.00	5,140	5.40	10,330
.70	1,100	1.90	2,980	3.20	5,540	5.60	10,790
.80	1,220	2.00	3,170	3.40	5,960	5.80	11,250
.90	1,350	2.10	3,360	3.60	6,380	6.00	11,710
1.00	1,480	2.20	3,550	3.80	6,810		
1.10	1,620	2.30	3,740	4.00	7,250		

NOTE.—The above table is based on six discharge measurements made during 1905. It is fairly well defined between gage heights 0.5 foot and 2.2 feet. Beyond these limits it is uncertain.

RATING TABLE FOR NOLICHUCKY RIVER NEAR GREENEVILLE, TENN., FOR 1906 AND 1907.

0.30	735	0.90	1,450	1.50	2,400	2.10	3,540
.40	835	1.00	1,590	1.60	2,580	2.20	3,750
.50	940	1.10	1,740	1.70	2,760	2.30	3,960
.60	1,060	1.20	1,900	1.80	2,950	2.40	4,180
.70	1,190	1.30	2,060	1.90	3,140	2.50	4,400
.80	1,310	1.40	2,230	2.00	3,340		

NOTE.—The above table is applicable only for open-channel conditions. It is based on three discharge measurements made during 1906, and on the general form of previous curves. There has been considerable change in the conditions of flow at this station, but the above rating is fairly good. Above gage height 2.3 feet the rating curve is a tangent, the difference being 220 per tenth.

ESTIMATED MONTHLY DISCHARGE OF NOLICHUCKY RIVER NEAR GREENEVILLE, TENN.  
[Drainage area, 1,099 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maxi- mum.	Mini- mum.	Mean.	Second- feet per Square Mile.	Depth in Inches.
<b>1903.</b>					
May 9-31.....	2,195	1,075	1,590	1.45	1.24
June.....	5,465	1,075	2,033	1.85	2.06
July.....	2,800	649	1,037	.94	1.09
August.....	1,485	557	886	.81	.93
September.....	1,200	388	521	.47	.53
October.....	850	350	434	.40	.46
November.....	2,595	388	576	.52	.58
December.....	1,335	312	571	.52	.60
<b>1904.</b>					
January.....	1,420	462	711	0.647	0.746
February.....	3,315	553	1,210	1.10	1.19
March.....	9,130	1,363	2,778	2.53	2.92
April.....	3,408	1,140	1,549	1.41	1.57
May.....	6,315	930	1,631	1.48	1.71
June.....	2,868	780	1,313	1.19	1.33
July.....	1,815	595	931	.847	.976
August.....	2,043	640	1,045	.951	1.10
September.....	1,033	430	573	.521	.581
October.....	430	320	369	.336	.387
November.....	930	355	588	.535	.597
December.....	1,890	510	869	.791	.912
The year.....	9,130	320	1,131	1.03	14.01
<b>1905.</b>					
January.....	7,250	645	1,513	1.38	1.59
February.....	7,690	780	2,604	2.37	2.47
March.....	3,940	1,220	1,872	1.70	1.96
April.....	4,540	1,100	1,852	1.69	1.89
May.....	7,690	1,220	2,909	2.65	3.06
June.....	5,340	880	1,543	1.40	1.56
July.....	11,940	1,045	2,650	2.41	2.78
August.....	8,130	1,045	2,230	2.03	2.34
September.....	1,220	600	815	.742	.828
October.....	1,220	600	722	.657	.757
November.....	690	558	604	.550	.614
December.....	5,960	600	1,820	1.66	1.91
The year.....	11,940	558	1,761	1.60	21.76
<b>1906.</b>					
January.....	32,300	1,000	3,760	3.42	3.94
February.....	4,070	1,590	2,180	1.98	2.06
March.....	5,940	1,450	2,360	2.15	2.48
April.....	9,900	1,380	2,460	2.24	2.50
May.....	5,720	1,060	2,110	1.92	2.21
June.....	6,600	940	1,840	1.67	1.86
July.....	3,140	940	1,820	1.65	1.90
August.....	10,800	1,240	3,070	2.79	3.22
September.....	16,900	1,590	4,020	3.65	4.07
October.....	8,580	1,660	3,370	3.06	3.53
November.....	19,800	1,240	2,850	2.59	2.89
December.....	8,360	1,240	2,270	2.06	2.38
The year.....	32,300	940	2,680	2.43	33.04

NOTE.—Values for 1906 are good.

ESTIMATED MONTHLY DISCHARGE OF NOLICHUCKY RIVER NEAR GREENEVILLE, TENN.  
—Continued.

[Drainage area, 1,099 square miles.]

Month.	Discharge in Second-feet.				Depth in Inches on Drainage Area.
	Maxi- mum.	Mini- mum.	Mean.	Per Square Mile.	
1907.					
January.....	5,060	1,120	1,860	1.69	1.95
February.....	2,140	1,000	1,380	1.25	1.30
March.....	5,060	1,240	2,210	2.01	2.32
April.....	3,750	1,180	2,000	1.82	2.03
May.....	3,140	1,000	1,680	1.53	1.76
June.....	6,820	1,310	2,920	2.65	2.96
July.....	3,640	1,000	1,600	1.45	1.67
August.....	1,590	735	1,060	.964	1.11
September.....	6,490	735	1,440	1.31	1.46
October.....	1,900	735	935	.850	.98
November.....	2,760	735	1,130	1.03	1.15
December.....	5,720	835	1,630	1.48	1.71
The year.....	6,820	735	1,650	1.50	20.40

NOLICHUCKY RIVER NEAR CHUCKY VALLEY, TENN.

This station was established September 6, 1900, and was located on the highway bridge about 1 mile above Chucky Valley Post-office.

The wire gage was suspended from the upstream side of the bridge, and the stage of the water surface was referred to a horizontal gage fastened to the guard-rail of the bridge.

The section presented at this point was very favorable for the making of accurate measurements of discharge, as the course of the river was straight for a long distance above and below the station, the bed of the stream was very smooth, the current velocity neither excessive nor too small, and the banks high and not subject to overflow.

This station was maintained until the great flood of May, 1901, swept away the bridge, which has not since been replaced.

DISCHARGE MEASUREMENTS OF NOLICHUCKY RIVER NEAR CHUCKY VALLEY, TENN.

Date.	Hydrographer.	Gage Height (Feet).	Discharge (Second- feet).
1900.			
Sept. 5	E. W. Myers.....	2.00	302
Sept. 20	L. V. Branch.....	2.18	442
Oct. 15	do.....	2.00	378
Nov. 10	do.....	2.90	919
1901.			
Mar. 31	R. F. Shuford.....	5.18	5,356
Apr. 14	E. W. Myers.....	4.45	3,022

DAILY GAGE HEIGHT, IN FEET, OF NOLICHUCKY RIVER NEAR CHUCKY VALLEY, TENN.,  
FOR 1900.

Day.	Sept.	Oct.	Nov.	Dec.	Day.	Sept.	Oct.	Nov.	Dec.
1.....		1.80	2.50	3.10	17.....	3.10	2.00	2.50	2.70
2.....		1.90	2.60	3.20	18.....	2.60	1.90	2.50	2.70
3.....		1.90	3.00	3.00	19.....	2.30	2.00	2.40	2.60
4.....		2.00	5.20	4.80	20.....	2.10	1.90	2.40	2.60
5.....	2.00	3.30	4.00	3.30	21.....	2.00	1.90	2.30	2.90
6.....	2.00	3.20	3.50	3.50	22.....	2.00	1.90	2.50	2.80
7.....	2.00	2.50	3.20	3.40	23.....	2.20	9.30	2.50	2.90
8.....	2.00	2.30	2.50	3.30	24.....	2.20	5.20	2.50	3.00
9.....	1.80	2.30	3.00	3.30	25.....	2.10	3.90	2.70	3.00
10.....	1.80	2.20	2.90	3.20	26.....	2.10	3.30	6.50	3.20
11.....	1.80	2.10	2.80	3.10	27.....	2.10	3.10	4.50	3.10
12.....	1.80	2.10	2.80	3.00	28.....	2.00	2.90	3.40	3.00
13.....	1.80	2.10	2.70	3.00	29.....	2.00	2.80	3.40	2.90
14.....	2.60	2.00	2.70	2.90	30.....	1.80	2.70	3.20	3.00
15.....	2.30	2.00	2.60	2.90	31.....		2.60		3.20
16.....	4.70	2.00	2.50	2.80					

DAILY GAGE HEIGHT, IN FEET, OF NOLICHUCKY RIVER NEAR CHUCKY VALLEY, TENN.,  
FOR 1901.

Day.	Jan.	Feb.	Mar.	Apr.	May.	Day.	Jan.	Feb.	Mar.	Apr.	May.
1.....	3.20	3.20	3.10	4.10	4.30	17.....	3.70	3.30	3.30	3.20	3.30
2.....	3.30	3.00	2.80	6.80	4.10	18.....	3.50	3.40	3.20	3.10	3.30
3.....	3.50	3.30	2.80	8.60	4.10	19.....	3.20	3.20	3.10	3.20	3.40
4.....	3.30	3.20	2.80	6.40	4.80	20.....	3.30	3.30	3.30	4.60	3.40
5.....	3.10	3.30	3.30	5.30	4.00	21.....	3.40	3.30	3.30	3.40	3.50
6.....	3.00	3.30	3.20	4.90	3.80	22.....	3.20	3.30	3.40	3.30	
7.....	3.00	3.40	2.90	4.70	3.60	23.....	3.50	3.40	3.40	3.30	
8.....	3.20	3.40	3.00	4.60	3.60	24.....	3.30	3.20	3.20	3.40	
9.....	3.00	4.00	3.30	4.40	4.00	25.....	3.30	3.40	3.30	3.80	
10.....	2.90	4.20	3.30	4.20	3.80	26.....	3.20	3.30	8.00	4.40	
11.....	3.00	3.90	4.70	4.00	3.80	27.....	3.20	3.20	5.30	4.50	
12.....	3.60	3.80	3.80	3.80	3.70	28.....	3.30	3.20	5.30	4.40	
13.....	5.20	3.60	3.50	3.00	3.60	29.....	3.30		4.50	4.50	
14.....	4.30	3.40	3.30	3.20	3.50	30.....	3.20		4.60	4.40	
15.....	4.00	3.30	3.30	3.10	3.40	31.....	3.30		4.40		
16.....	3.90	3.40	3.40	3.20	3.40						

RATING TABLE FOR NOLICHUCKY RIVER NEAR CHUCKY VALLEY, TENN., FOR 1900 AND 1901.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.8	270	4.4	2,925	7.0	12,650	9.6	23,050
1.9	305	4.5	3,150	7.1	13,050	9.7	23,450
2.0	340	4.6	3,400	7.2	13,450	9.8	23,850
2.1	390	4.7	3,675	7.3	13,850	9.9	24,250
2.2	440	4.8	3,950	7.4	14,250	10.0	24,650
2.3	500	4.9	4,300	7.5	14,650	10.1	25,050
2.4	560	5.0	4,650	7.6	15,050	10.2	25,450
2.5	625	5.1	5,050	7.7	15,450	10.3	25,850
2.6	695	5.2	5,450	7.8	15,850	10.4	26,250
2.7	765	5.3	5,850	7.9	16,250	10.5	26,650
2.8	840	5.4	6,250	8.0	16,650	10.6	27,050
2.9	920	5.5	6,650	8.1	17,050	10.7	27,450
3.0	1,000	5.6	7,050	8.2	17,450	10.8	27,850
3.1	1,085	5.7	7,450	8.3	17,850	10.9	28,250
3.2	1,175	5.8	7,850	8.4	18,250	11.0	28,650
3.3	1,275	5.9	8,250	8.5	18,650	11.1	29,050
3.4	1,385	6.0	8,650	8.6	19,050	11.2	29,450
3.5	1,505	6.1	9,050	8.7	19,450	11.3	29,850
3.6	1,630	6.2	9,450	8.8	19,850	11.4	30,250
3.7	1,770	6.3	9,850	8.9	20,250	11.5	30,650
3.8	1,910	6.4	10,250	9.0	20,650	11.6	31,050
3.9	2,060	6.5	10,650	9.1	21,050	11.7	31,450
4.0	2,210	6.6	11,050	9.2	21,450	11.8	31,850
4.1	2,370	6.7	11,450	9.3	21,850	11.9	32,250
4.2	2,540	6.8	11,850	9.4	22,250	12.0	32,650
4.3	2,725	6.9	12,250	9.5	22,650		

ESTIMATED MONTHLY DISCHARGE OF NOLICHUCKY RIVER NEAR CHUCKY VALLEY, TENN.

[Drainage area, 817 square miles.]

Month.	Discharge in Second-feet.			Total in Acre-feet.	Run-off.		Rainfall.
	Maxi- mum.	Mini- mum.	Mean.		Second- Feet per Square Mile.	Depth in Inches.	Inches.
1900.							
September*-----	-----	-----	536	27,642	0.656	0.63	3.08
October-----	21,850	270	1,444	88,788	1.767	2.04	5.33
November-----	10,650	500	1,433	85,270	1.754	1.96	3.89
December-----	3,950	695	1,173	72,125	1.435	1.65	3.40
1901.							
January-----	5,450	920	1,490	91,617	1.823	2.09	3.84
February-----	2,540	1,000	1,413	78,474	1.729	1.81	2.03
March-----	16,650	840	2,280	140,192	2.790	3.22	4.37
April-----	19,050	1,000	3,457	205,706	4.231	4.75	5.12
May†-----	-----	-----	1,868	77,807	2.286	1.79	6.92

\*26 days.

†May 1 to 21. Does not include great May flood, which washed bridge and gage away.

Note on rainfall for May, 1901: This does not contain any record from station in mountains of North Carolina for this month, where the rainfall was very great from May 18 to 23, causing greatest floods ever known in most of the rivers draining the region.

## NORTH TOE RIVER AT SPRUCE PINE, N. C.

This station was established on June 19, 1907. It is located at a suspension footbridge, about 600 feet west of the railroad station at Spruce Pine.

The gage is a vertical rod attached to a special timber, which is spiked to a tree on the right bank, about 200 feet above the footbridge.

Discharge measurements are made from the bridge, which is about 15 feet above the water. The banks are high, but the right one may overflow at high floods. The current is partly sluggish and the bed is sandy and probably shifting.

The bench mark is a nail driven in the root of the tree to which the gage is attached; elevation, 3.00 feet.

## DISCHARGE MEASUREMENTS OF NORTH TOE RIVER AT SPRUCE PINE, N. C., IN 1907.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
June 19	Warren E. Hall	85	211	1.17	0.98	248
June 20	do	85	220	1.13	.98	248
Aug. 6	do	82	186	.83	.79	154
Aug. 6	B. M. Hall, Jr.	82	186	.81	.79	151
Sept. 4	do	82	181	.93	.81	168

## DAILY GAGE HEIGHT, IN FEET, OF NORTH TOE RIVER AT SPRUCE PINE, N. C., FOR 1907.

Day.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		1.10	1.00	0.80	0.80	0.80	0.80
2		1.10	1.00	.80	.80	.90	.80
3		1.10	1.00	.80	.80	.80	.80
4		1.00	1.00	.80	.80	.80	.80
5		1.00	.90	.80	1.10	.70	.80
6		1.00	.90	.80	.80	.70	.80
7		1.00	.80	.80	.80	.70	.80
8		1.00	.80	.80	.80	.70	.80
9		1.00	.80	.80	.80	.70	1.40
10		1.00	.90	.80	.80	.70	1.20
11		1.00	.90	1.80	.80	.70	1.00
12		1.00	1.00	1.00	.80	.70	1.10
13		1.10	.80	.90	.80	.70	1.10
14		1.20	.80	.90	.80	.70	1.50
15		1.10	.80	.80	.80	.70	1.40
16		1.10	.80	.80	.80	.70	1.20
17		1.10	1.10	.70	.80	.80	.90
18		1.10	.80	.70	.80	.80	.90
19	1.00	1.00	.80	.70	.70	.80	.90
20	1.00	1.00	.80	.70	.70	.80	.90
21	1.10	1.10	.80	.70	.70	1.00	.90
22	1.00	1.10	.80	.70	.70	1.00	1.00
23	1.10	.90	.80	5.80	.70	1.00	1.80
24	1.20	1.00	.80	2.10	.70	1.00	1.40
25	1.00	1.00	.80	1.10	.70	1.00	1.20
26	1.10	.90	.80	1.00	.70	.90	1.00
27	1.10	.90	.80	1.00	.80	.80	1.00
28	1.30	1.00	.80	1.00	.80	.80	1.00
29	1.20	1.00	.80	1.00	.80	.80	1.00
30	1.10	1.00	.80	1.00	.80	.80	1.50
31		1.00	.80		.80		1.30

DAILY GAGE HEIGHTS IN FEET OF NORTH TOE RIVER AT SPRUCE PINE, N. C., FOR 1908.

Day	Jan.	Feb.	Mar.	Apr.	May.	June	Day	Jan.	Feb.	Mar.	Apr.	May.	June
1.....	1.30	1.30	1.30	1.30	1.30	1.30	17.....	1.30	1.40	1.30	1.30	1.40	1.00
2.....	1.40	1.40	1.30	1.30	1.30	1.30	18.....	1.00	1.30	1.30	1.30	1.00	1.00
3.....	1.40	1.40	1.30	1.30	1.30	1.30	19.....	1.30	1.30	1.30	1.30	1.40	1.00
4.....	1.40	1.40	1.30	1.30	1.30	1.30	20.....	1.10	1.30	1.30	1.40	1.40	1.00
5.....	1.40	1.40	1.30	1.30	1.30	1.30	21.....	1.00	1.30	1.30	1.40	1.30	1.40
6.....	1.40	1.40	1.30	1.30	1.30	1.30	22.....	1.00	1.30	1.30	1.05	1.40	1.00
7.....	1.40	1.40	1.30	1.30	1.40	1.10	23.....	1.40	1.30	1.40	1.05	1.40	1.30
8.....	1.40	1.40	1.30	1.30	1.30	1.30	24.....	1.40	1.30	1.40	1.40	1.40	1.00
9.....	1.40	1.40	1.40	1.40	1.30	1.30	25.....	1.30	1.30	1.30	1.70	1.40	1.10
10.....	1.40	2.30	1.30	1.40	1.40	1.40	26.....	1.30	1.30	1.30	1.00	1.40	1.00
11.....	1.30	2.40	1.30	1.40	1.40	1.40	27.....	1.30	1.40	1.30	1.40	1.40	1.00
12.....	2.30	1.40	1.30	1.40	1.40	1.40	28.....	1.30	1.40	1.30	1.40	1.40	1.00
13.....	1.40	1.40	1.30	1.40	1.05	1.00	29.....	1.30	1.40	1.30	1.30	1.40	.90
14.....	1.40	1.40	1.40	1.00	1.00	1.00	30.....	1.10	.....	1.30	1.30	1.30	.90
15.....	1.40	.....	1.30	1.40	1.00	1.50	31.....	1.10	.....	.....	.....	1.10	.....
16.....	1.40	1.40	1.20	1.40	1.00	1.30							

RATING TABLE FOR NORTH TOE RIVER AT SPRUCE PINE, N. C., FOR 1907 AND 1908.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
0.70	120	0.85	180	0.95	230	1.05	290
.75	140	.90	205	1.00	260	1.10	320
.90	160						

## PIGEON RIVER AT NEWPORT, TENN.

This station was established September 4, 1900, by E. W. Myers. It is located at the highway bridge in the eastern part of Newport, Tenn., 1 mile from the railroad station and 1 mile above the dam of the Newport Flouring Mill, out of reach of backwater.

The channel is straight for about 300 feet above and 200 feet below the station. The section is deep, rough, and irregular in shape; the velocity is poorly distributed and about 50 feet of the total width at low stages is still water or has a negative velocity. The right bank is low and overflows to some extent, but all water passes beneath the bridge and its approach. The left bank is a high, vertical rock cliff. The bed of the stream is rocky near the left bank and sandy near the right bank.

Discharge measurements are made from the lower side of the single-span steel highway bridge. The section is better for measurement at the Southern Railway bridge, about 300 feet below, at which point some of the measurements have been made.

The original wire gage was replaced April 30, 1903, by a standard chain gage fastened to the lower chord of the bridge in the third panel on the downstream side. The datum of the two gages is the same; chain length, 29.94 feet. Since it was first established the gage has been damaged several times, and the records are continuous only from December 14, 1902. Bench marks were established as follows: (1) The top surface of the outer left corner of the hanger plate at the bottom of the

downstream end of the second floor beam from the left bank; elevation, 26.87 feet. (2) The top of a copper plug set in cement on the top of a limestone outcrop about 5 feet upstream and 3 feet to the left of the end of the upstream handrail on the left bank; elevation, 32.61 feet. Elevations refer to datum of the gage. This station was discontinued December 31, 1905.

## DISCHARGE MEASUREMENTS OF PIGEON RIVER AT NEWPORT, TENN.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1903.						
Feb. 12	E. W. Myers.....	---	1,278	---	3.98	3,450
Feb. 18	....do.....	---	1,339	---	4.12	4,862
Mar. 17	....do.....	---	1,105	---	2.58	2,031
Apr. 2	B. S. Drane.....	---	1,197	---	3.50	3,586
Apr. 30	E. C. Murphy.....	---	1,227	---	2.46	1,912
June 29	B. S. Drane.....	---	1,032	---	1.59	620
June 30	....do.....	---	1,024	---	1.51	649
Aug. 12	....do.....	---	1,031	---	1.41	773
Sept. 2	....do.....	---	584	---	.97	367
Sept. 2	....do.....	---	919	---	.97	349
Oct. 13	....do.....	---	908	---	.82	249
Oct. 13	....do.....	---	559	---	.82	272
Nov. 20	....do.....	---	951	---	1.12	424
1904.						
Feb. 22	B. S. Drane.....	159	1,203	1.72	2.68	2,070
Mar. 29	....do.....	150	1,132	1.57	2.45	1,775
Apr. 26	....do.....	143	992	.87	1.68	861
July 8	J. M. Giles.....	110	835	.77	1.27	642
Aug. 20	B. S. Drane.....	134	854	.50	1.10	425
Aug. 20*	....do.....	228	585	.84	1.10	490
Oct. 15	....do.....	125	783	.21	.62	169
Oct. 15*	....do.....	221	443	.49	.62	216
1905.						
Feb. 9	B. S. Drane.....	164	1,415	3.35	4.28	4,737
May 11	W. E. Hall.....	130	925	.97	1.75	920
June 21	B. S. Drane.....	139	1,054	1.28	2.13	1,348
Aug. 21	W. E. Hall.....	127	920	1.06	1.75	973
Dec. 19	F. A. Murray.....	140	979	.89	1.63	865
Dec. 26	....do.....	141	1,036	1.28	2.03	1,325

\*At railroad bridge.



DAILY GAGE HEIGHT, IN FEET, OF PIGEON RIVER AT NEWPORT, TENN., FOR 1903-1904.

1903.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	2.85	2.85	(*)	3.90	2.40	2.20	1.70	1.50	1.00	0.70	0.80	0.85
2.....	2.87	2.85		3.50	2.30	2.10	1.60	1.50	1.00	.70	.85	.90
3.....	2.85	2.85	3.30	3.40	2.30	2.30	1.70	1.50	1.00	.70	.85	.90
4.....	2.87	5.82	3.30	4.90	2.20	2.30	1.60	1.40	1.00	.70	.85	.85
5.....	2.77	3.67	3.20	3.70	2.10	2.90	1.60	1.40	.95	.75	.90	.85
6.....	2.84	3.07	3.10	3.10	2.10	5.50	1.50	1.30	.90	.75	.90	.85
7.....	2.85	(*)	3.00	4.90	2.10	3.40	1.60	1.30	.90	.70	.85	.85
8.....	2.84		4.30	11.00	2.00	3.30	1.50	1.20	.90	.85	.85	.90
9.....	2.85		3.50	6.70	2.00	3.00	1.50	1.20	.90	1.55	.85	.90
10.....	2.84		3.20	4.30	1.90	2.70	1.60	1.20	.95	1.00	.85	.90
11.....	(*)		3.20	3.70	1.90	2.50	1.50	1.60	.95	.80	.90	.75
12.....			3.10	4.20	1.80	2.40	1.60	1.50	.85	.80	.90	.70
13.....			3.10	5.70	1.80	2.30	1.50	1.20	.80	.80	.90	1.15
14.....			3.00	4.80	1.80	2.20	1.50	1.10	.80	.80	.90	1.15
15.....			2.80	4.10	1.70	2.10	1.50	2.00	.80	.80	.95	1.00
16.....			2.70	3.90	1.70	2.10	1.60	2.60	.85	.80	.95	.95
17.....			2.70	3.70	1.70	2.10	1.90	2.40	1.45	.85	1.70	.85
18.....	2.85		2.60	3.50	1.80	2.00	1.70	2.00	1.30	1.20	1.80	.65
19.....	2.85		2.60	3.50	1.70	2.00	1.80	1.50	1.00	.85	1.40	1.55
20.....	2.85		2.50	3.40	1.70	1.90	1.70	1.40	.95	.80	1.10	1.55
21.....	2.85		2.40	3.20	1.70	1.90	1.50	1.30	.90	.80	1.00	1.45
22.....	2.85		2.50	3.20	1.70	1.90	1.40	1.30	.85	.80	1.00	1.35
23.....	2.85		10.50	3.10	1.80	1.90	1.40	1.20	.80	.80	1.00	1.20
24.....	2.85		5.80	3.10	1.80	1.80	1.40	1.20	.80	.80	.95	1.10
25.....	2.85		5.00	3.10	1.70	1.80	1.30	1.10	.80	.80	.95	1.15
26.....	2.87		3.90	8.00	1.80	1.80	1.20	1.00	.80	.75	.95	1.20
27.....	2.88		3.50	2.90	1.80	1.70	1.20	1.00	.85	.75	1.00	1.20
28.....	2.87		3.10	2.80	1.80	1.80	1.20	1.00	.80	.75	1.00	1.10
29.....	2.88		3.50	2.80	1.90	1.70	1.20	1.10	.70	.75	1.00	1.05
30.....	2.87		6.20	2.40	2.00	1.70	1.40	1.00	.70	.80	.95	1.00
31.....	2.85		4.20		2.20		1.60	1.00		.80		.90
1904.												
1.....	1.00	1.15	1.90	2.00	1.85	1.80	1.60	1.10	1.15	0.70	0.60	1.10
2.....	1.05	1.10	1.85	1.90	1.80	1.70	1.45	1.50	1.25	.65	.60	1.00
3.....	1.10	1.10	1.80	1.85	1.75	1.65	1.20	1.10	1.20	.65	.65	.90
4.....	1.00	1.05	1.70	1.80	1.80	1.50	1.20	1.20	1.25	.65	.80	1.00
5.....	.70	1.10	1.65	1.75	1.75	1.30	1.20	1.40	1.25	.65	1.05	1.20
6.....	.50	1.15	1.60	1.70	1.70	1.50	1.30	1.55	1.30	.70	.95	2.40
7.....	1.15	1.50	6.30	1.75	1.60	1.70	1.45	1.50	1.15	.65	.85	1.60
8.....	1.00	2.40	3.10	1.90	2.00	1.85	1.30	1.30	1.00	.65	.80	1.25
9.....	.95	2.00	2.50	2.50	2.70	1.50	2.25	1.40	1.00	.65	.70	1.10
10.....	1.00	1.75	2.35	2.00	2.25	1.35	1.75	1.50	1.00	.65	.65	1.05
11.....	1.10	1.55	2.30	1.80	2.00	1.30	1.45	1.55	.95	.60	.65	1.00
12.....	1.25	1.50	2.30	1.75	1.95	1.35	1.75	1.60	.95	.60	.60	1.00
13.....	1.20	1.40	2.10	1.70	1.90	1.35	1.50	1.70	.95	.60	.70	1.00
14.....	1.10	1.40	2.05	1.60	1.85	1.25	1.25	1.40	.90	.60	.80	.95
15.....	1.10	1.35	2.00	1.65	1.80	1.20	1.25	1.35	.85	.60	.90	.90
16.....	1.15	1.30	2.00	1.70	1.70	1.20	1.15	1.40	.80	.55	.85	.90
17.....	1.15	1.30	1.90	1.70	1.60	1.15	1.30	1.15	.80	.55	.80	.90
18.....	1.15	1.30	1.90	1.65	1.60	1.20	1.20	1.05	.80	.55	.80	.85
19.....	1.15	1.30	1.90	1.60	1.55	1.20	1.10	1.05	.80	.55	.75	.85
20.....	1.20	1.40	1.80	1.50	1.50	1.30	1.00	1.10	.80	.60	.75	.70
21.....	1.25	1.40	2.00	1.75	1.45	1.50	1.00	1.10	.75	.60	.80	.65
22.....	2.05	2.65	2.50	1.85	1.35	1.40	1.40	1.15	.75	.55	.80	.65
23.....	3.15	2.25	5.10	1.75	1.35	1.40	1.50	1.50	.75	.55	.90	.60
24.....	2.00	1.85	2.30	1.60	1.35	1.20	1.45	1.40	.70	.55	1.00	.90
25.....	1.75	1.20	2.20	1.60	1.40	1.25	1.40	1.30	.70	.60	.90	.95
26.....	1.60	1.65	2.80	1.60	1.40	1.25	1.30	1.40	.70	.60	.80	1.00
27.....	1.50	2.70	2.95	1.95	1.35	1.35	1.20	1.30	.75	.60	.75	1.05
28.....	1.40	2.20	2.75	2.00	1.30	1.45	1.05	1.25	.75	.60	.75	3.05
29.....	1.30	2.00	2.45	2.00	1.25	1.50	1.00	1.20	.75	.60	.75	1.90
30.....	1.25		2.30	2.00	1.20	1.70	1.00	1.15	.70	.60	1.20	1.50
31.....	1.20		2.15		2.20		1.05	1.10		.60		1.40

\*No record.

DAILY GAGE HEIGHT, IN FEET, OF PIGEON RIVER AT NEWPORT, TENN., FOR 1905.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	1.35	1.35	2.00	1.60	1.90	1.90	1.50	1.40	1.40	0.90	0.95	0.90
2.....	1.30	1.30	1.95	1.50	1.70	1.75	1.45	1.40	1.45	.95	.95	.95
3.....	1.40	1.20	1.80	1.50	1.60	1.60	1.45	1.35	1.45	.95	.90	4.10
4.....	1.45	1.05	1.75	1.55	1.60	1.60	1.30	1.35	1.40	1.00	.90	3.50
5.....	1.55	1.10	1.75	1.60	1.65	1.55	1.40	1.30	1.30	1.20	1.00	2.00
6.....	1.70	1.45	1.70	1.75	2.00	1.50	1.55	1.25	1.20	1.00	1.00	1.60
7.....	2.00	1.90	1.80	2.10	2.00	1.40	1.50	1.25	1.20	.90	1.00	1.70
8.....	1.50	1.70	1.90	2.00	2.00	1.50	1.45	1.35	1.20	.90	1.00	1.75
9.....	1.15	4.90	2.00	2.40	2.00	1.45	1.40	2.35	1.20	.90	.95	2.15
10.....	1.45	3.30	3.40	2.20	1.95	1.35	1.50	1.85	1.15	.90	.95	2.00
11.....	1.35	2.55	2.80	2.05	2.00	1.30	1.90	1.90	1.15	1.10	.90	1.90
12.....	5.00	2.50	2.30	2.60	1.70	1.30	7.60	3.15	1.15	1.15	.90	1.80
13.....	4.00	2.40	2.15	2.40	1.80	1.55	4.10	2.50	1.15	1.20	.90	1.70
14.....	2.80	2.55	2.10	2.20	1.80	1.35	2.90	2.30	1.10	1.10	.90	1.75
15.....	2.40	2.25	2.00	2.05	2.50	1.35	2.40	2.10	1.05	1.10	.90	1.75
16.....	2.30	2.10	1.90	2.00	3.90	1.40	2.10	2.00	1.05	1.05	.85	1.70
17.....	1.90	2.00	1.85	1.85	3.00	1.90	2.00	2.25	1.05	1.00	.85	1.70
18.....	1.80	1.95	1.85	1.80	2.35	1.80	2.00	2.45	1.00	.95	.80	1.65
19.....	1.75	1.85	1.80	1.75	2.10	1.60	2.00	2.00	1.00	.95	.80	1.60
20.....	1.65	4.00	2.00	1.70	2.00	1.55	1.90	1.90	1.20	1.00	1.00	1.60
21.....	1.55	5.00	2.25	1.70	1.95	2.10	1.85	1.75	1.20	1.20	1.10	1.95
22.....	1.50	3.80	2.10	1.70	2.10	1.80	1.85	1.75	1.20	1.10	1.10	2.20
23.....	1.40	3.10	1.95	1.65	2.70	1.85	1.80	1.70	1.05	1.00	1.05	2.00
24.....	1.20	3.00	1.90	1.00	2.20	1.75	1.75	1.80	1.05	.95	1.00	2.00
25.....	1.05	2.50	1.85	1.55	2.10	1.60	1.70	2.00	1.05	1.00	.90	2.00
26.....	.95	2.30	1.80	1.50	2.05	1.55	1.60	1.80	1.00	1.05	.90	1.90
27.....	.80	2.20	1.70	1.75	2.55	2.45	1.55	1.75	.95	1.10	.95	1.80
28.....	1.20	2.10	1.70	1.60	2.25	2.00	1.55	1.60	.95	1.20	.85	1.75
29.....	1.25	.....	1.60	1.65	2.10	1.75	2.00	1.50	.90	1.10	.85	1.60
30.....	1.25	.....	1.70	2.00	1.95	1.60	1.80	1.45	.90	1.00	.90	1.65
31.....	1.30	.....	1.70	.....	1.95	.....	1.65	1.40	.....	1.00	.....	1.65

RATING TABLE FOR PIGEON RIVER AT NEWPORT, TENN., FOR 1903.

Gage Height (Feet).	Discharge (Second-foot).	Gage Height (Feet).	Discharge (Second-foot).	Gage Height (Feet).	Discharge (Second-foot).	Gage Height (Feet).	Discharge (Second-foot).
0.6	160	1.6	756	2.6	2,090	3.6	3,805
.7	210	1.7	854	2.7	2,240	3.7	4,000
.8	260	1.8	962	2.8	2,390	3.8	4,195
.9	312	1.9	1,080	2.9	2,550	3.9	4,390
1.0	366	2.0	1,210	3.0	2,710	4.0	4,590
1.1	420	2.1	1,350	3.1	2,870	4.1	4,790
1.2	478	2.2	1,490	3.2	3,050	4.2	4,995
1.3	538	2.3	1,640	3.3	3,235	4.4	5,420
1.4	600	2.4	1,790	3.4	3,425	4.6	5,860
1.5	670	2.5	1,940	3.5	3,615	4.8	6,310

Table uncertain above 4 feet gage height. Differences from 4.8 feet, 225 per tenth.

RATING TABLE FOR PIGEON RIVER AT NEWPORT, TENN., FOR 1904.

Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).
0.6	180	1.5	710	2.4	1,660	3.3	3,300
.7	225	1.6	790	2.5	1,810	3.4	3,500
.8	275	1.7	875	2.6	1,970	3.5	3,700
.9	325	1.8	965	2.7	2,140	3.6	3,900
1.0	380	1.9	1,060	2.8	2,320	3.7	4,100
1.1	440	2.0	1,160	2.9	2,510	3.8	4,300
1.2	500	2.1	1,270	3.0	2,700	3.9	4,500
1.3	565	2.2	1,390	3.1	2,900	4.0	4,700
1.4	635	2.3	1,520	3.2	3,100	5.0	6,700

The above table is based upon measurements made 1900-1904, and is well defined. Above gage height 3 feet the rating curve is a tangent, the difference being 200 per tenth.

RATING TABLE FOR PIGEON RIVER AT NEWPORT, TENN., FOR 1905.

0.80	300	2.20	1,460	3.60	3,640	4.90	6,170
.90	345	2.30	1,560	3.70	3,830	5.00	6,370
1.00	400	2.40	1,720	3.80	4,020	5.20	6,770
1.10	460	2.50	1,860	3.90	4,210	5.40	7,170
1.20	525	2.60	2,000	4.00	4,400	5.60	7,580
1.30	595	2.70	2,140	4.10	4,590	5.80	8,000
1.40	665	2.80	2,290	4.20	4,780	6.00	8,420
1.50	740	2.90	2,440	4.30	4,970	6.20	8,840
1.60	820	3.00	2,600	4.40	5,170	6.40	9,260
1.70	910	3.10	2,760	4.50	5,370	6.60	9,680
1.80	1,010	3.20	2,930	4.60	5,570	6.80	10,130
1.90	1,110	3.30	3,100	4.70	5,770	7.00	10,570
2.00	1,220	3.40	3,280	4.80	5,970	7.50	11,670
2.10	1,340	3.50	3,460				

NOTE.—The above table is based on discharge measurements made during 1904-1905. It is fairly well defined between gage heights 1.6 feet and 4.5 feet. The table has been extended beyond these limits.

ESTIMATED MONTHLY DISCHARGE OF PIGEON RIVER AT NEWPORT, TENN.

[Drainage area, 655 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maxi- mum.	Mini- mum.	Mean.	Second- feet per Square Mile.	Depth in Inches.
1903.					
January 1-10 and 18-31*	-----	-----	2,470	3.77	3.36
February 1-6*	-----	-----	3,962	6.05	1.35
March 3-31*	-----	-----	4,076	6.22	6.71
April.....	20,260	1,790	4,704	7.18	8.01
May.....	1,790	854	1,112	1.70	1.96
June.....	7,885	854	1,741	2.66	2.97
July.....	1,080	478	701	1.07	1.23
August.....	2,090	366	655	1.00	1.15
September.....	635	210	319	.49	.55
October.....	713	210	275	.42	.48
November.....	962	260	373	.57	.64
December.....	713	185	380	.58	.67

\*No record for missing days.

ESTIMATED MONTHLY DISCHARGE OF PIGEON RIVER AT NEWPORT, TENN.—Continued.  
[Drainage area, 655 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maxi- mum.	Mini- mum.	Mean.	Second- feet per Square Mile.	Depth in Inches.
<b>1904.</b>					
January.....	3,000	140	635	0.969	1.12
February.....	2,140	410	846	1.29	1.39
March.....	9,300	790	1,859	2.84	3.27
April.....	1,810	710	974	1.49	1.66
May.....	2,140	500	895	1.37	1.58
June.....	1,012	470	653	.997	1.11
July.....	1,455	380	598	.913	1.05
August.....	875	410	583	.890	1.03
September.....	565	225	340	.519	.579
October.....	225	160	184	.281	.324
November.....	500	180	275	.420	.469
December.....	2,800	180	529	.808	.932
The year.....	9,300	140	698	1.07	14.51
<b>1905.</b>					
January.....	6,370	300	1,111	1.70	1.96
February.....	6,370	430	1,956	2.99	3.11
March.....	3,250	820	1,220	1.86	2.14
April.....	2,000	740	1,080	1.65	1.84
May.....	4,210	820	1,402	2.14	2.47
June.....	1,790	595	1,211	1.85	2.06
July.....	11,890	595	1,463	2.23	2.57
August.....	2,845	560	1,068	1.63	1.88
September.....	702	345	491	.750	.837
October.....	525	345	419	.640	.738
November.....	460	300	365	.557	.621
December.....	4,590	345	1,177	1.80	2.08
The year.....	11,890	300	1,080	1.65	22.31

## PIGEON RIVER AT CANTON, N. C.

The station here was established on May 25, 1907, and is located at the wagon bridge, about 1,000 feet above the railroad crossing.

The vertical gage is attached to a special post on the left bank, about 50 feet above the bridge.

Discharge measurements are made from the single-span steel highway bridge, which is 165 feet long, and is supported by stone abutments.

The flow is confined between the bridge abutments, probably from all stages. The current is rather sluggish and the bed is sandy.

The bench mark is the top of the downstream end of the second floor beam from the left end of the bridge; elevation, 21.13 feet.

## DISCHARGE MEASUREMENTS OF PIGEON RIVER AT CANTON, N. C., FOR 1907.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
May 25	F. A. Murray .....	129	298	0.92	3.07	274
Aug. 24	Frank P. Thomas .....	119	240	.58	2.60	141
Aug. 24	do. ....	119	247	.58	2.58	144
Oct. 22	Olin P. Hall .....	110	261	.40	2.50	105

## DAILY GAGE HEIGHT, IN FEET, OF PIGEON RIVER AT CANTON, N. C., FOR 1907.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....		3.50	2.90	2.60	2.50	2.80	2.60	2.90
2.....		3.20	3.05	2.60	2.50	2.80	2.65	2.85
3.....		3.20	3.10	2.60	2.50	2.75	2.80	2.80
4.....		3.10	2.90	2.60	2.50	2.70	2.70	2.80
5.....		3.05	2.80	2.60	2.50	2.70	2.60	2.70
6.....		3.00	2.80	2.60	2.50	2.70	2.60	2.70
7.....		3.00	2.80	2.60	2.50	2.70	2.60	2.70
8.....		3.35	2.80	2.60	2.65	2.70	2.60	2.70
9.....		3.20	2.70	2.60	2.60	2.60	2.65	2.90
10.....		3.15	2.70	2.60	2.50	2.60	3.05	3.85
11.....		3.05	2.70	2.60	2.50	2.60	2.85	3.20
12.....		3.00	3.05	2.75	2.60	2.55	2.75	3.10
13.....		3.00	2.90	2.65	2.50	2.50	2.60	3.05
14.....		3.00	2.90	2.60	2.50	2.50	2.60	3.10
15.....		3.00	3.00	2.60	2.50	2.50	2.60	3.40
16.....		2.90	3.20	2.70	2.50	2.50	2.60	3.25
17.....		2.90	2.90	2.65	2.50	2.50	2.60	3.20
18.....		2.90	3.00	2.60	2.50	2.50	2.60	3.15
19.....		2.90	2.90	2.60	2.50	2.50	2.75	3.05
20.....		2.90	2.90	2.60	2.50	2.50	2.80	3.00
21.....		2.90	2.80	2.60	2.60	2.50	3.85	3.00
22.....		2.90	2.70	2.60	2.75	2.50	3.20	3.00
23.....		3.00	2.70	2.70	6.10	2.50	3.25	4.80
24.....		3.15	2.75	2.65	3.15	2.50	3.60	3.65
25.....	3.10	3.00	2.80	2.60	2.85	2.50	3.40	3.50
26.....	3.15	2.90	2.70	2.50	2.75	2.50	3.20	3.40
27.....	3.03	2.95	2.70	2.50	2.70	2.50	3.00	3.25
28.....	3.00	3.10	2.70	2.50	2.90	2.70	2.90	3.20
29.....	3.00	3.00	2.70	2.50	3.20	2.65	2.90	3.20
30.....	3.00	2.90	2.70	2.50	2.85	2.60	2.90	4.00
31.....	3.20		2.70	2.50		2.60		4.10

DAILY GAGE HEIGHT, IN FEET, OF PIGEON RIVER AT CANTON, N. C., FOR 1908.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1.....	3.80	3.25	3.30	3.30	3.40	3.00	2.90	2.80	3.20	2.80
2.....	3.60	3.20	3.30	3.25	3.40	3.00	2.90	2.80	3.20	2.80
3.....	3.30	3.20	3.30	3.20	3.40	3.00	2.95	2.80	3.15	2.80
4.....	3.40	3.25	3.35	3.20	3.40	3.00	3.10	2.90	3.10	2.80
5.....	3.60	3.30	3.40	3.20	3.35	3.10	3.65	3.05	3.70	2.70
6.....	3.40	3.20	3.50	3.20	3.30	3.15	3.40	3.50	3.50	2.70
7.....	3.40	3.10	3.50	3.15	3.65	3.20	3.55	3.30	3.40	2.65
8.....	3.35	3.10	3.45	3.10	3.00	3.10	3.55	3.00	3.35	2.60
9.....	3.30	3.10	3.35	3.10	3.50	3.10	3.45	2.80	3.30	3.30
10.....	3.30	3.10	3.30	3.05	3.40	3.10	3.35	2.80	3.20	4.00
11.....	4.50	3.35	3.30	3.00	3.40	3.10	3.25	2.80	3.10	3.20
12.....	4.60	3.75	3.80	3.00	3.35	3.00	3.15	2.90	3.00	3.20
13.....	3.90	3.95	3.40	3.00	3.30	3.00	3.10	2.90	3.00	3.10
14.....	3.70	4.30	3.35	3.00	3.30	3.00	3.10	2.90	3.00	3.10
15.....	3.55	7.70	3.30	3.25	3.25	3.30	3.10	2.90	3.00	3.05
16.....	3.50	4.40	3.30	3.45	3.20	3.15	3.05	2.90	3.00	3.00
17.....	3.45	4.10	3.30	3.45	3.20	3.10	3.00	2.90	2.90	3.00
18.....	3.40	3.90	3.30	3.40	3.20	3.05	2.90	2.95	2.90	3.00
19.....	3.30	3.70	3.30	3.35	3.20	3.00	3.05	3.05	2.90	3.00
20.....	3.30	3.55	3.95	3.30	3.20	3.30	2.90	3.15	2.90	2.90
21.....	3.25	3.50	3.70	3.20	3.10	3.00	2.90	3.60	2.90	2.90
22.....	3.20	3.45	3.50	3.20	3.10	3.00	2.85	3.95	2.80	2.95
23.....	3.10	3.40	4.20	3.20	3.10	3.00	2.80	3.35	2.80	5.00
24.....	3.10	3.40	4.10	3.20	3.10	3.00	2.80	3.40	2.80	4.00
25.....	3.10	3.40	3.80	5.20	3.10	2.90	2.85	4.90	2.80	3.70
26.....	3.10	3.40	3.65	3.85	3.10	2.90	3.05	4.40	2.80	3.65
27.....	3.25	3.30	3.60	3.75	3.00	2.90	2.90	3.80	2.80	3.60
28.....	3.10	3.30	3.55	3.65	3.00	2.90	3.15	3.65	2.80	3.95
29.....	3.10	3.30	3.50	3.50	3.00	2.90	3.05	3.50	2.80	4.60
30.....	3.10	-----	3.40	3.45	3.00	2.90	2.95	3.35	2.80	4.10
31.....	3.30	-----	3.35	-----	3.00	-----	2.90	3.30	-----	3.95

RATING TABLE FOR PIGEON RIVER AT CANTON, N. C., FOR 1907 AND 1908.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
2.50	105	2.70	150	2.90	205	3.10	265
2.55	115	2.75	162	2.95	220	3.15	280
2.60	125	2.80	175	3.00	235	3.20	300
2.65	137	2.85	190	3.05	250		

## IVY RIVER AT DEMOCRAT, N. C.

This station was established on May 26, 1907, and is located at the wagon bridge, Democrat, N. C., about 18 miles west of Asheville, N. C.

The vertical gage is located as follows: The lower section is on a special post, spiked to a small willow tree on the right bank about 150 feet below the bridge. The upper section is attached to a sycamore tree about 25 feet to the right of the lower one.

Discharge measurements are made from the wagon bridge, which is a single steel span, supported on stone abutments. The banks are both high, and will not overflow. The current is irregular, and the bed is rocky and rough.

The bench mark is the top of the downstream end of the second floor beam from the left end of the bridge; elevation, 15.35 feet.

The station was abandoned at the end of 1907.

DISCHARGE MEASUREMENTS OF IVY RIVER AT DEMOCRAT, N. C., FOR 1907.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
May 27	Warren E. Hall	60	114	0.71	1.00	81
July 11	do	55	87	.67	.89	58
July 11	Frank P. Thomas	55	87	.59	.89	51
Sept. 24	Warren E. Hall	55	94	.68	1.00	64

DAILY GAGE HEIGHT, IN FEET, OF IVY RIVER AT DEMOCRAT, N. C., FOR 1907.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....		1.70	1.30	1.00	0.70	0.80	0.70	0.80
2.....		1.10	1.20	1.00	.70	.80	.80	.90
3.....		1.50	1.10	.90	.70	.80	.90	.80
4.....		1.30	1.10	.90	.70	.80	.80	.80
5.....		1.20	1.00	.90	.80	1.00	.80	.80
6.....		1.10	1.00	.90	.70	.80	.80	.70
7.....		1.10	1.00	.90	.70	.80	.80	.70
8.....		1.20	1.00	.90	.90	.80	.80	.80
9.....		1.40	1.00	.90	.80	.80	.80	1.00
10.....		1.20	.90	.90	.80	.70	1.00	1.70
11.....		1.30	.90	.80	.90	.70	1.00	1.30
12.....		1.30	1.20	.90	.70	.70	.90	1.00
13.....		1.20	1.20	1.00	.70	.70	.90	1.00
14.....		1.20	1.10	.90	.60	.70	.90	1.70
15.....		1.20	1.00	.90	.70	.70	.80	1.30
16.....		1.10	1.10	.80	.90	.70	.80	1.20
17.....		1.10	1.10	.80	.70	.70	.80	1.00
18.....		1.00	1.50	1.10	.70	.70	1.00	1.00
19.....		1.00	1.30	1.00	.70	.80	.90	1.00
20.....		1.20	1.20	1.00	.60	.70	.90	1.00
21.....		1.10	1.10	.90	.60	.70	1.10	1.00
22.....		1.00	1.00	.80	.80	.70	1.00	1.00
23.....		1.10	1.00	.80	3.80	.80	1.10	1.70
24.....		1.20	1.10	.90	1.10	.80	1.30	1.40
25.....		1.20	1.10	.80	1.00	.80	1.00	1.20
26.....		1.30	1.00	.80	.80	.70	1.00	1.10
27.....	1.00	1.20	1.00	.70	.80	.80	1.00	1.10
28.....	1.00	1.30	1.00	.70	.80	.90	1.00	1.10
29.....	.90	1.60	1.00	.80	1.00	.90	.90	1.10
30.....	.90	1.40	1.30	.80	.80	.80	.90	1.90
31.....	1.00		1.10	.90		.80		1.40

RATING TABLE FOR IVY RIVER AT DEMOCRAT, N. C., FOR 1907.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
0.70	32	0.85	49	0.95	62	1.05	79
.75	37	.90	55	1.00	70	1.10	88
.85	43						

## SWANNANOA RIVER AT BILTMORE, N. C.

This station was established May 21, 1904, for the purpose of making miscellaneous measurements. It is located at the Biltmore, N. C., terminal of the Asheville-Biltmore electric railway line, about three-fourths of a mile above the mouth of Swannanoa River.

The channel is straight for about 1,000 feet above and curved for 300 feet below the station. The current is sluggish above and somewhat swifter below the bridge. Both banks are high and not subject to overflow. The bed of the stream is composed of sand. There is but one channel at all stages.

Discharge measurements are made from the upstream side of a single-span highway bridge.

Bench marks were established as follows: (1) The center of the center-pin bearing at the upstream end of the second floor beam from the right bank; elevation, 16.00 feet. (2) The center of the head of a small wire nail driven into a triangular-shaped blaze in the downstream side of a birch tree on the right bank, about 25 feet above the bridge; elevation, 5.74 feet. Elevations refer to the datum of the assumed gage.

## DISCHARGE MEASUREMENTS OF SWANNANOA RIVER AT BILTMORE, N. C.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second-feet).
1904.						
May 21	B. S. Drane.....	73	165	0.86	1.12	143
July 20	....do.....	72	107	.35	.71	38
Aug. 16	....do.....	74	134	.75	.97	100
1905.						
Apr. 17	B. S. Drane.....	74	140	1.19	1.24	167
June 28	....do.....	75	140	1.24	1.22	175
Aug. 26	....do.....	75	158	1.28	1.29	204
1906.						
Apr. 16	Olin P. Hall.....	80	266	....	2.35	617

## SWANNANOA RIVER AT SWANNANOA, N. C.

The station here was established on May 28, 1907, and is located at the iron highway bridge  $\frac{1}{4}$  of a mile from the railroad station.

The gage is a vertical rod in two sections, the lower of which is attached to a scantling spiked to a birch tree on the right bank, about 50 feet above the bridge. The upper section is attached to the pile foundation of W. D. Patton's store.



The discharge measurements are made from the highway bridge, which is a single steel span with short approaches at each end. The banks are high, but may overflow at high floods, especially the left bank. The current is fairly good, and the bed is sand and gravel.

The bench mark is the top of the upstream end of the second floor beam from the right end of the bridge; elevation, 16.50 feet.

DISCHARGE MEASUREMENTS OF SWANNANOA RIVER AT SWANNANOA, N. C., FOR 1907.

Date.	Hydrographer.	Meter Number.	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second-feet).
May 28	Warren E. Hall	54	112	0.75	1.65	84
July 12	do.	54	127	1.04	1.91	134
July 12	Frank P. Thomas	54	128	1.01	1.89	130
Aug. 17	B. M. Hall, Jr.	50	100	.47	1.36	47
Aug. 17	do.	50	103	.50	1.37	52
Aug. 17	do.	50	107	.47	1.37	50
Sept. 25	Warren E. Hall	49	109	.61	1.48	66
Sept. 25	do.	49	109	.58	1.47	63
Dec. 11	do.	55	111	.96	1.87	107
Dec. 12	do.	55	106	.87	1.76	92

DAILY GAGE HEIGHT, IN FEET, OF SWANNANOA RIVER AT SWANNANOA, N. C., FOR 1907.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		2.50	2.10	1.60	1.10	1.40	1.20	1.50
2		2.40	2.00	1.50	1.10	1.40	1.10	1.40
3		2.70	1.90	1.50	1.30	1.40	1.10	1.40
4		2.50	2.10	1.50	1.30	1.40	1.10	1.40
5		2.20	1.90	1.50	1.20	1.40	1.20	1.40
6		2.00	1.80	1.50	1.20	1.40	1.20	1.40
7		2.00	1.80	1.40	1.30	1.40	1.30	1.40
8		2.10	1.70	1.70	1.30	1.20	1.30	1.50
9		2.10	1.70	1.50	1.20	1.30	1.30	1.50
10		2.00	1.70	1.50	1.40	1.30	1.40	2.70
11		2.00	1.70	1.50	1.40	1.20	1.40	2.00
12		1.90	1.90	1.60	1.30	1.20	1.40	1.80
13		1.90	1.90	1.50	1.20	1.20	1.40	1.70
14		1.90	1.70	1.40	1.20	1.20	1.40	2.70
15		1.80	1.80	1.50	1.20	1.20	1.40	2.60
16		1.80	1.90	1.40	1.20	1.20	1.40	2.50
17		1.70	3.45	1.40	1.20	1.20	1.50	1.90
18		1.70	2.50	1.70	1.20	1.20	1.50	1.70
19		1.70	2.10	1.50	1.20	1.20	1.50	1.60
20		1.60	2.00	1.50	1.10	1.20	1.50	1.60
21		1.80	2.00	1.40	1.10	1.20	1.80	1.60
22		1.90	1.80	1.40	1.10	1.10	1.90	1.60
23		2.40	1.80	1.40	4.80	1.10	1.95	3.00
24		2.20	1.80	1.50	1.90	1.10	2.00	2.90
25		2.20	1.70	1.40	1.50	1.20	1.90	2.80
26		2.60	1.60	1.40	1.40	1.20	1.90	2.70
27		2.45	1.60	1.30	1.30	1.20	1.80	2.60
28	1.70	2.70	1.60	1.20	1.50	1.30	1.80	1.80
29	1.60	2.50	1.60	1.20	1.40	1.30	1.70	1.80
30	1.60	2.30	2.00	1.10	1.40	1.20	1.50	3.05
31	1.70		2.70	1.20		1.20		3.00

DAILY GAGE HEIGHT, IN FEET, OF SWANNANOA RIVER AT SWANNANOA, N. C., FOR 1908.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1.....	2.00	1.70	2.10	2.00	2.00	2.00	1.40	1.70	2.10	1.50
2.....	1.90	1.70	2.10	2.00	2.00	2.00	1.40	1.70	2.00	1.50
3.....	1.90	1.70	2.10	1.90	1.90	1.90	1.70	1.60	1.90	1.50
4.....	1.90	1.70	2.00	1.90	1.90	1.80	1.70	1.90	1.90	1.40
5.....	2.10	1.70	2.10	1.90	1.90	1.80	1.90	1.90	3.10	1.40
6.....	1.90	1.80	2.10	1.90	1.90	1.90	2.45	1.90	3.60	1.40
7.....	1.90	1.70	2.20	1.90	2.40	1.90	2.10	1.90	2.30	1.40
8.....	1.90	1.70	2.10	1.80	2.00	1.80	2.50	1.80	2.10	1.40
9.....	1.80	1.70	2.10	1.80	2.00	1.80	2.30	2.10	2.00	2.80
10.....	1.80	1.70	2.10	1.80	2.00	1.80	2.00	1.90	2.00	3.00
11.....	2.30	2.00	2.20	1.80	1.90	1.80	1.90	1.80	1.90	2.80
12.....	3.80	2.40	2.50	1.80	1.90	1.80	1.80	1.80	1.90	2.00
13.....	3.80	2.90	2.30	1.70	1.80	1.70	1.80	1.70	1.80	1.80
14.....	3.60	3.00	2.20	1.70	1.80	1.70	1.90	1.70	1.60	1.80
15.....	4.30	7.80	2.10	1.90	1.80	1.70	1.90	1.60	1.50	1.70
16.....	2.20	4.00	2.10	2.20	1.70	1.70	1.70	1.70	1.50	1.60
17.....	2.10	3.80	2.10	2.10	2.00	1.60	1.60	1.70	1.60	1.60
18.....	2.10	3.60	2.10	2.10	1.80	1.60	1.50	1.70	1.60	1.60
19.....	1.90	3.60	2.00	2.00	2.50	1.60	1.50	1.70	1.70	1.60
20.....	1.90	3.40	2.20	2.00	2.10	1.60	1.50	1.70	1.60	1.60
21.....	1.90	3.00	2.20	1.90	1.90	1.60	1.50	1.60	1.60	1.60
22.....	1.90	2.80	2.20	1.90	1.90	1.60	1.50	2.00	1.60	1.60
23.....	1.90	2.40	3.00	1.90	1.90	1.60	2.00	2.20	1.50	6.10
24.....	1.80	2.10	3.50	1.80	1.90	1.50	1.70	4.40	1.60	3.90
25.....	1.80	2.10	2.70	3.40	1.90	1.50	1.70	4.20	1.60	3.80
26.....	1.80	2.00	2.50	2.70	1.90	1.50	1.60	3.60	1.50	3.70
27.....	1.80	2.10	2.30	2.40	2.20	1.50	1.60	3.00	1.50	3.40
28.....	1.80	2.10	2.30	2.30	2.20	1.50	1.60	2.80	1.50	2.80
29.....	1.70	2.10	2.20	2.20	2.30	1.40	1.80	2.40	1.50	3.80
30.....	1.70	.....	2.10	2.10	2.30	1.40	2.10	2.20	1.40	3.00
31.....	1.70	.....	2.00	.....	2.10	.....	1.90	2.10	.....	2.90

RATING TABLE FOR SWANNANOA RIVER AT SWANNANOA, N. C., FOR 1907 AND 1908.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.10	30	1.50	62	1.90	120	2.30	202
1.15	33	1.55	68	1.95	129	2.35	214
1.20	36	1.60	74	2.00	138	2.40	226
1.25	40	1.65	81	2.05	148	2.45	238
1.30	44	1.70	88	2.10	158	2.50	250
1.35	48	1.75	96	2.15	169		
1.40	52	1.80	102	2.20	180		
1.45	57	1.85	111	2.25	191		

## MUD CREEK AT NAPLES, N. C.

The station here, located at a wooden wagon bridge  $\frac{1}{2}$  a mile east of Naples, was established on May 10, 1907.

The staff gage is attached to the downstream vertical post of the first bent from the right end of the bridge.

Discharge measurements are made from the wagon bridge, which is a wood structure, supported by crib abutments and one bent in the middle.

Both banks are high, but will overflow at times. The bed of the stream is sandy and shifting.

The bench mark is the top of nails driven in the downstream end of the middle bent cap; elevation, 11.00 feet.

## DISCHARGE MEASUREMENTS OF MUD CREEK AT NAPLES, N. C., FOR 1907.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage (Height Feet).	Discharge (Second- feet).
May 10	Warren E. Hall	33	79	2.40	2.41	188
July 17	do.	32	50	1.76	1.78	88
July 17	Frank P. Thomas	32	51	1.84	1.78	94
Aug. 17	Warren E. Hall	33	61	1.85	1.80	113
Aug. 17	do.	33	60	1.72	1.80	112
Sept. 18	do.	29	39	1.74	1.51	68
Sept. 18	do.	29	37	1.64	1.50	61
Dec. 10	do.	39	164	3.20	4.08	525
Dec. 10	do.	39	164	3.18	4.10	522

## DAILY GAGE HEIGHT, IN FEET, OF MUD CREEK AT NAPLES, N. C., FOR 1907.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		4.20	2.10	1.90	1.20	1.60	1.30	1.80
2		3.00	2.10	1.90	1.30	1.40	1.20	1.50
3		2.70	2.30	2.10	1.70	1.60	1.20	1.60
4		2.50	2.20	2.00	1.80	1.70	1.30	1.40
5		3.30	2.00	1.80	1.50	1.70	1.50	1.20
6		2.20	1.90	1.90	1.40	1.70	1.60	1.10
7		2.20	1.90	1.80	1.50	1.70	1.40	1.30
8		2.60	1.80	1.80	1.80	1.80	1.60	1.90
9		2.50	1.70	1.90	1.70	1.60	1.60	4.00
10	2.40	4.00	1.70	1.90	1.60	1.80	2.00	4.20
11	2.65	2.90	1.70	1.90	2.20	1.60	1.80	4.00
12	2.40	2.50	1.80	2.00	1.60	1.70	1.90	3.80
13	2.30	2.10	1.80	1.80	1.60	1.50	1.80	5.00
14	2.20	2.10	1.80	1.90	1.20	1.30	1.60	8.50
15	2.20	2.10	1.80	1.90	1.20	1.10	1.70	7.00
16	2.20	2.10	1.80	1.90	1.30	1.20	1.50	5.90
17	2.20	2.10	1.80	1.80	1.10	1.50	1.90	4.70
18	2.10	2.00	2.00	1.70	1.20	1.30	3.00	3.00
19	2.10	2.00	1.90	1.80	1.30	1.60	2.70	2.80
20	2.10	2.20	1.80	1.90	1.50	1.50	2.00	2.60
21	2.00	2.40	1.80	1.80	1.20	1.20	4.00	2.90
22	2.00	2.20	1.80	1.90	1.30	1.50	3.60	2.20
23	2.00	2.20	1.70	2.00	4.00	1.50	6.00	8.00
24	2.00	2.30	1.70	1.80	3.20	1.50	5.30	6.00
25	2.00	2.30	1.80	1.70	2.00	1.40	3.90	5.00
26	3.90	2.20	1.70	1.60	1.80	1.50	3.40	4.90
27	3.10	2.20	1.70	1.50	1.20	1.20	2.80	3.00
28	2.40	2.10	1.70	1.50	2.00	1.10	1.90	3.00
29	2.20	2.10	2.00	1.60	2.20	1.50	1.70	3.50
30	2.20	2.20	2.00	1.30	1.80	1.60	1.50	5.00
31	3.00		1.90	1.20		1.20		4.90

RATING TABLE FOR MUD CREEK AT NAPLES, N. C., FOR 1907.

Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).
1.10	30	1.60	72	2.10	136	2.60	230
1.15	33	1.65	77	2.15	145	2.65	240
1.20	37	1.70	82	2.20	154	2.70	250
1.25	41	1.75	88	2.25	163	2.75	260
1.30	45	1.80	94	2.30	172	2.80	270
1.35	49	1.85	100	2.35	181	2.85	280
1.40	53	1.90	106	2.40	190	2.90	290
1.45	57	1.95	113	2.45	200	2.95	300
1.50	62	2.00	120	2.50	210	3.00	310
1.55	67	2.05	128	2.55	220		

## NORTH FORK MILLS RIVER AT PINKBED, N. C.

This station was established May 18, 1904. It is located at the wagon bridge in the village of Pinkbed, N. C.

The channel is straight for about 200 feet above and below the station. The current is swift. Both banks are about 10 feet above low water and are not liable to overflow. There is a wide, level stretch of land from the left bank to the foot of the hill. The bed of the stream is composed of loose rock and is probably permanent. There is but one channel at all stages.

Discharge measurements are made from the single 39-foot span wagon bridge. The bridge rests upon log-crib abutments and the floor is about 10 feet above low water.

The gage is a vertical timber 10 feet long, spiked to the log crib on the right bank at the upper side of the bridge. It is referred to bench marks as follows: (1) A nail driven into the bottom log of the crib on the right bank, at the downstream corner of the crib; elevation, 1.70 feet. (2) The center of a nail driven into a notch on a small poplar tree on the left bank about 40 feet above the bridge; elevation, 5.70 feet. Elevations refer to the datum of the gage.

## DISCHARGE MEASUREMENTS OF MILLS RIVER (NORTH FORK) AT PINKBED, N. C.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1904.						
Apr. 21	M. R. Hall.....	36	27	1.45	0.70	39.4
May 18	B. S. Drane.....	37	31	1.61	.82	50.6
July 18	do.....	34	22	1.23	.56	27.0
Aug. 18	do.....	34	23	1.40	.64	33.0
Oct. 3	do.....	29	17	1.11	.47	18.0
Oct. 3	do.....	20	17	1.01	.47	17.0
Dec. 9	do.....	33	19	1.17	.52	22.0
Dec. 9	do.....	33	19	1.08	.52	20.0

## DISCHARGE MEASUREMENTS OF MILLS RIVER (NORTH FORK) AT PINKBED, N. C.—Continued.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second)	Gage Height (Feet).	Discharge (Second- feet).
1905.						
Apr. 12	B. S. Drane.....	39	51	1.73	1.28	88.0
Apr. 12	do.....	39	51	1.75	1.29	89.0
June 22	do.....	39	43	1.73	1.12	74.0
June 22	do.....	39	43	1.81	1.12	78.0
Aug. 29	do.....	39	38	1.94	1.08	73.0
Aug. 29	do.....	39	38	1.71	1.08	66.0
Nov. 11	W. E. Hall.....	38	24	1.38	.68	33.0
1906.						
June 14	W. E. Hall.....	38	81	----	2.22	351.0
Sept. 15	do.....	39	40	----	1.19	92.0
Sept. 15	do.....	39	41	----	1.19	93.0
1907.						
Apr. 3	Warren E. Hall.....	37	25	1.76	0.95	44.0
Apr. 3	do.....	35	25	1.84	.95	46.0
July 15	do.....	35	22	1.81	.85	40.0
Sept. 20	do.....	32	14	1.28	.56	18.0
Dec. 13	do.....	37	25	1.76	.90	44.0

## DAILY GAGE HEIGHT, IN FEET, OF MILLS RIVER (NORTH FORK) AT PINKBED, N. C., FOR 1904.

Day.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	0.80	0.60	0.85	0.60	0.45	0.45	0.45
2.....	.85	.55	.65	.65	.45	.45	.45
3.....	.80	.55	.60	.55	.45	.55	.50
4.....	.70	.50	.65	.55	.45	.90	.50
5.....	.70	.50	.65	.90	.45	.80	.60
6.....	.65	.50	.70	.70	.45	.50	.70
7.....	.90	.50	.75	.65	.45	.50	.60
8.....	.75	.50	.95	.60	.45	.50	.50
9.....	.70	.90	.80	.60	.45	.45	.50
10.....	.70	.70	.85	.55	.45	.45	.55
11.....	.70	.70	1.35	.60	.45	.45	.50
12.....	.65	.65	1.15	.60	.45	.45	.50
13.....	.60	.60	.90	.60	.45	1.00	.50
14.....	.60	.55	.80	.55	.45	.50	.50
15.....	.60	.55	.75	.55	.45	.50	.50
16.....	.60	.55	.70	.55	.45	.50	.50
17.....	.70	.70	.70	.55	.45	.50	.50
18.....	.70	.65	.65	.50	.45	.50	.50
19.....	.70	.55	.60	.50	.45	.50	.45
20.....	.85	.50	.65	.50	.45	.50	.60
21.....	.70	.55	.60	.50	.45	.50	.60
22.....	.75	.55	.60	.50	.45	.50	.60
23.....	.65	.60	.60	.50	.45	.50	.45
24.....	.60	.55	.65	.50	.45	.45	.50
25.....	.60	.55	.65	.50	.45	.45	.50
26.....	.55	.60	.60	.50	.45	.45	.50
27.....	.60	.55	.80	.50	.45	.45	.70
28.....	.65	.55	.75	.50	.45	.45	1.00
29.....	.65	.55	.65	.45	.45	.45	.70
30.....	.65	.55	.55	.45	.45	.45	.70
31.....		.55	.60	-----	.45	-----	.55

DAILY GAGE HEIGHT, IN FEET, OF MILLS RIVER (NORTH FORK) AT PINKBED, N. C., FOR 1905 AND 1906.

1905.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	0.55	0.65	1.10	0.90	0.90	1.00	1.60	1.10	1.00	0.80	0.70	0.60
2.....	.55	.65	1.10	.85	.90	1.00	1.30	1.05	1.05	.80	.70	.60
3.....	.60	.60	1.10	.85	1.00	.90	1.15	1.05	1.00	.80	.70	1.50
4.....	.70	.60	1.10	.85	.95	.90	1.10	1.05	1.05	.80	.70	.90
5.....	.70	.65	1.10	.95	1.25	.90	1.00	1.05	.90	.80	.70	.80
6.....	.80	.70	1.05	.95	1.20	.90	1.10	1.05	.90	.80	.70	.75
7.....	.80	.75	1.10	.90	1.15	.80	1.05	1.00	.90	.75	.70	.70
8.....	.75	.75	1.10	.90	1.10	.85	1.10	1.00	.90	.75	.70	.90
9.....	.70	.85	1.10	1.05	1.10	.80	1.00	1.10	.90	.70	.70	1.80
10.....	.60	.90	1.40	.90	1.05	.80	1.10	1.10	.90	.70	.65	1.30
11.....	.60	.80	1.15	.90	1.00	.80	1.90	1.40	.90	1.30	.65	.90
12.....	2.50	.85	1.20	1.40	1.00	.80	4.00	1.60	.90	.80	.65	.90
13.....	1.45	1.20	1.10	1.15	1.00	.80	2.40	1.50	.90	.80	.65	.90
14.....	1.15	.85	1.10	1.10	1.00	.75	2.20	1.30	.85	.75	.60	.90
15.....	.90	1.00	1.10	1.05	1.00	.75	1.90	1.25	.85	.75	.60	1.20
16.....	.85	.90	1.05	1.05	1.20	1.50	1.70	1.20	.80	.75	.60	1.00
17.....	.95	.80	1.00	1.05	1.10	1.70	1.60	1.15	.80	.75	.60	.90
18.....	.80	.95	1.00	1.00	1.05	1.40	1.50	1.15	.80	.75	.60	.90
19.....	.75	.80	1.00	1.00	1.00	1.30	1.50	1.15	.80	.75	.70	.95
20.....	.75	.90	.90	1.00	1.00	1.30	1.50	1.10	.80	.75	.70	1.00
21.....	.70	1.25	1.25	.95	1.10	1.25	1.40	1.10	.90	.70	.70	1.50
22.....	.70	1.30	1.05	.95	1.00	1.15	1.40	1.05	.80	.70	.60	1.20
23.....	.70	1.40	1.05	.95	1.05	1.05	1.30	1.05	.80	.70	.60	1.20
24.....	.70	1.30	1.00	.90	1.05	1.00	1.30	1.20	.80	.70	.60	1.20
25.....	.65	1.25	1.00	.90	1.00	1.00	1.25	1.25	.80	.70	.60	1.10
26.....	1.00	1.20	.95	1.00	1.20	.95	1.20	1.35	.80	.70	.60	1.00
27.....	1.00	1.15	.90	.90	1.10	1.05	1.20	1.15	.80	.75	.60	1.00
28.....	.75	1.10	.90	.90	1.30	.95	1.20	1.10	.75	.75	.60	.95
29.....	.65	-----	.90	1.05	1.20	.90	1.20	1.10	.75	.75	.60	1.05
30.....	.65	-----	1.00	.95	1.10	1.30	1.20	1.05	.80	.75	.60	1.00
31.....	.65	-----	.90	-----	1.05	-----	1.10	1.00	-----	.70	-----	.90
1906.												
1.....	0.90	1.45	1.00	1.50	1.05	0.90	1.20	1.10	1.50	2.30	1.25	1.25
2.....	.90	1.40	.95	1.40	1.00	1.10	1.15	1.10	1.40	2.30	1.20	1.20
3.....	2.20	1.35	1.50	1.30	1.00	.90	1.15	1.15	1.30	3.10	1.20	1.20
4.....	2.00	1.35	1.30	1.25	1.00	1.10	1.10	1.10	1.25	2.80	1.20	1.20
5.....	1.55	1.30	1.10	1.30	1.00	1.20	1.10	1.10	1.45	2.45	1.20	1.20
6.....	1.40	1.25	1.10	1.25	1.00	1.10	1.10	1.10	1.45	2.30	1.20	1.15
7.....	1.30	1.25	1.10	1.20	1.00	1.00	1.10	1.10	1.40	2.10	1.20	1.15
8.....	1.20	1.20	1.10	1.15	1.00	1.00	1.10	1.10	1.30	1.95	1.15	1.15
9.....	1.10	1.15	1.10	1.10	1.00	1.00	1.20	1.10	1.40	1.85	1.15	1.15
10.....	1.10	1.10	1.05	1.10	.95	1.00	1.10	1.05	1.35	1.80	1.15	1.15
11.....	1.10	1.10	1.00	1.10	.95	1.10	1.10	1.00	1.25	1.70	1.10	1.15
12.....	1.20	1.15	1.00	1.10	.90	1.20	1.10	1.00	1.20	1.65	1.10	1.15
13.....	1.15	1.10	1.00	1.10	.90	3.70	1.05	1.00	1.20	1.60	1.10	1.10
14.....	1.20	1.10	1.00	1.30	.90	2.40	1.05	1.10	1.30	1.55	1.10	1.10
15.....	1.15	1.10	1.50	1.80	.90	3.70	1.50	1.10	1.20	1.55	1.10	1.10
16.....	1.15	1.05	1.15	1.50	.85	2.30	1.45	1.10	1.20	1.50	1.10	1.10
17.....	1.10	1.05	1.10	1.40	.75	2.10	1.30	1.10	1.15	1.50	1.10	1.10
18.....	1.10	1.05	1.05	1.30	.75	1.90	1.40	1.10	2.00	1.55	1.40	1.10
19.....	1.10	1.05	1.60	1.30	.70	1.70	1.60	1.10	3.10	1.60	2.60	1.10
20.....	1.05	1.00	1.40	1.25	.80	1.60	1.55	1.05	2.20	1.55	1.70	1.15
21.....	1.05	1.30	1.40	1.20	.80	1.50	1.40	1.15	1.90	1.50	1.60	1.15
22.....	4.00	1.10	1.35	1.15	.80	1.50	1.40	1.10	1.80	1.45	1.50	1.15
23.....	3.00	1.05	1.20	1.15	.80	1.40	1.30	1.05	1.70	1.40	1.50	1.10
24.....	2.20	1.00	1.10	1.10	.80	1.40	1.20	1.05	1.65	1.40	1.40	1.10
25.....	1.90	1.00	1.10	1.10	.75	1.35	1.20	1.00	1.70	1.40	1.35	1.10
26.....	1.80	1.00	1.10	1.10	1.60	1.30	1.20	1.00	1.60	1.35	1.30	1.10
27.....	1.60	1.10	1.15	1.10	1.10	1.30	1.20	1.05	1.65	1.30	1.30	1.10
28.....	1.55	1.00	1.10	1.10	1.05	1.25	1.15	1.50	1.80	1.30	1.30	1.10
29.....	1.50	-----	1.55	1.05	1.00	1.20	1.10	1.60	2.40	1.30	1.25	1.10
30.....	1.50	-----	1.80	1.05	.90	1.20	1.10	1.70	2.40	1.25	1.25	1.10
31.....	1.50	-----	1.60	-----	.90	-----	1.10	1.80	-----	-----	-----	1.80

DAILY GAGE HEIGHT, IN FEET, OF MILLS RIVER (NORTH FORK) AT PINKBED, N. C., FOR 1907.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	1.50	1.00	1.00	1.00	1.10	1.50	.90	.90	.65	.80	.75	.85
2.....	1.40	1.00	1.20	1.00	1.05	1.20	.90	.85	.65	.75	1.00	.80
3.....	1.35	1.00	1.10	1.00	1.70	1.20	.90	.80	.65	.75	.80	.80
4.....	1.25	1.05	1.05	1.00	1.60	1.15	.90	.80	.65	.70	.70	.80
5.....	1.20	1.10	1.05	.95	1.40	1.10	.90	.80	.65	.70	.70	.80
6.....	1.15	1.00	1.00	1.50	1.40	1.10	.90	.75	.65	.70	.70	.80
7.....	1.15	1.00	1.00	1.10	1.40	1.05	.90	.75	.65	.70	.70	.80
8.....	1.15	1.10	1.00	1.10	1.25	1.30	.90	.70	.65	.70	.70	.80
9.....	1.10	1.05	1.00	1.05	1.20	1.10	.90	.70	.70	.70	.70	.85
10.....	1.10	1.00	1.00	1.05	1.20	1.10	.90	.70	.70	.70	.70	1.20
11.....	1.10	1.00	1.00	1.00	1.20	1.05	.90	.70	.70	.70	.70	1.15
12.....	1.10	1.00	1.00	1.00	1.20	1.00	.90	.75	.70	.70	.70	1.15
13.....	1.10	1.00	1.00	1.00	1.20	1.00	.90	.75	.70	.70	.70	.95
14.....	1.10	1.00	1.00	1.00	1.15	1.00	.90	.75	.70	.70	.70	1.35
15.....	1.10	.95	1.00	1.00	1.15	1.00	.90	.70	.70	.70	.70	1.20
16.....	1.10	.95	1.00	1.00	1.10	1.00	.90	.70	.70	.70	.70	1.15
17.....	1.10	.95	1.00	1.00	1.10	.95	.90	.70	.70	.70	.70	1.00
18.....	1.10	.95	1.00	1.00	1.10	.95	.90	.80	.70	.70	1.00	1.00
19.....	1.05	.95	.95	1.10	1.10	.95	.85	.80	.65	.70	.95	1.00
20.....	1.05	.95	.95	1.00	1.10	1.00	.80	.80	.65	.70	.95	1.00
21.....	1.05	.95	.95	1.00	1.10	1.05	.80	.80	.65	.70	1.45	.95
22.....	1.05	.95	.90	1.20	1.05	1.00	.80	.80	.65	.70	.95	.90
23.....	1.00	.95	.90	1.10	1.00	1.00	.80	.80	2.30	.70	1.00	2.50
24.....	1.00	1.00	.90	1.10	1.10	1.00	.80	.80	.90	.70	1.20	1.40
25.....	1.00	1.00	.90	1.05	1.10	1.00	.90	.70	.80	.70	1.10	1.25
26.....	1.00	1.00	.90	1.05	1.30	.95	.90	.70	.75	.70	1.05	1.10
27.....	1.00	1.00	.90	1.20	1.20	1.00	.90	.70	.80	.70	1.00	1.10
28.....	1.00	1.00	.90	1.10	1.10	1.00	.90	.70	.90	.70	.95	1.10
29.....	1.00	.....	.90	1.10	1.10	1.10	.90	.70	.90	.70	.90	1.10
30.....	1.00	.....	.90	1.10	1.00	.90	1.00	.70	.85	.70	.85	1.70
31.....	1.00	.....	.90	.....	1.10	.....	.90	.65	.....	.70	.....	1.30

DAILY GAGE HEIGHT, IN FEET, OF MILLS RIVER (NORTH FORK) AT PINKBED, N. C., FOR 1908.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1.....	1.25	1.10	1.35	1.20	1.25	1.00	0.80	1.00	1.20	0.90
2.....	1.20	1.10	1.35	1.20	1.20	1.00	.80	1.00	1.05	.85
3.....	1.15	1.20	1.30	1.15	1.20	1.00	.90	.90	1.00	.85
4.....	1.10	1.20	1.30	1.15	1.15	1.00	1.60	.90	1.00	.85
5.....	1.10	1.20	1.30	1.10	1.15	1.10	1.10	.90	1.50	.85
6.....	1.10	1.10	1.30	1.10	1.15	1.05	1.10	1.25	1.30	.85
7.....	1.15	1.05	1.25	1.10	1.60	1.05	1.10	1.10	1.20	.80
8.....	1.10	1.05	1.25	1.10	1.35	1.00	1.20	1.05	1.10	.80
9.....	1.05	1.05	1.25	1.10	1.30	.90	1.60	1.00	1.10	1.05
10.....	1.00	1.05	1.20	1.05	1.25	1.00	1.25	1.00	1.05	1.15
11.....	1.05	1.10	1.20	1.05	1.20	1.05	1.25	1.00	1.05	1.00
12.....	2.30	1.40	1.20	1.05	1.20	1.00	1.10	.95	1.00	.90
13.....	1.30	1.60	1.20	1.05	1.15	.95	1.00	.90	1.00	.80
14.....	1.25	1.80	1.20	1.00	1.10	.95	.90	.90	1.00	.80
15.....	1.20	3.40	1.10	1.50	1.10	1.05	.90	.90	1.00	.80
16.....	1.20	2.70	1.10	1.20	1.10	1.00	.90	.90	1.00	.80
17.....	1.20	2.20	1.10	1.15	1.50	.95	.90	.85	.95	.80
18.....	1.20	1.70	1.10	1.10	1.15	.95	.90	1.00	.95	.80
19.....	1.20	1.60	1.10	1.10	1.15	.90	.85	.90	.90	.80
20.....	1.15	1.50	1.10	1.10	1.30	.90	.85	.95	.90	.80
21.....	1.10	1.50	1.10	1.10	1.15	.90	.85	.95	.90	.80
22.....	1.10	1.40	1.10	1.10	1.10	.85	.85	1.50	.90	.85
23.....	1.10	1.40	1.35	1.05	1.10	.85	1.15	1.30	.90	1.90
24.....	1.10	1.35	1.35	1.05	1.10	.85	.90	1.70	.90	1.40
25.....	1.10	1.35	1.30	2.25	1.10	.85	.85	2.30	.90	1.15
26.....	1.10	1.50	1.30	1.55	1.05	.85	.85	2.10	.90	1.10
27.....	1.05	1.35	1.30	1.40	1.05	.80	.85	1.70	.90	1.05
28.....	1.05	1.35	1.25	1.30	1.00	.80	1.00	1.50	1.10	1.40
29.....	1.05	1.30	1.25	1.25	1.10	.80	1.10	1.40	.90	3.10
30.....	1.05	.....	1.20	1.30	1.10	.80	1.35	1.30	.90	1.90
31.....	1.10	.....	1.20	.....	1.05	.....	1.10	1.25	.....	1.60

RATING TABLE FOR MILLS RIVER (NORTH FORK) AT PINKBED, N. C., FROM JUNE 1 TO DECEMBER 31, 1904.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
0.45	16	0.70	39	0.95	65	1.20	95
.50	20	.75	44	1.00	71	1.25	101
.55	24	.80	49	1.05	77	1.30	107
.60	29	.85	54	1.10	83	1.35	113
.65	34	.90	59	1.15	89		

The above table is applicable only for open-channel conditions. It is based upon eight discharge measurements made during 1904. It is well defined between gage heights 0.45 foot and 0.85 foot. The table has been extended above gage height 0.85 foot.

RATING TABLE FOR MILLS RIVER (NORTH FORK) AT PINKBED, N. C., FOR 1905.

0.50	17	1.10	73	1.60	123	2.10	177
.60	26	1.20	83	1.70	133	2.20	188
.70	35	1.30	93	1.80	144	2.30	199
.80	44	1.40	103	1.90	155	2.40	211
.90	53	1.50	113	2.00	166	2.50	223
1.00	63						

NOTE.—The above table is based on seven discharge measurements made during 1905. It is well defined between gage heights 0.6 foot and 1.3 feet. Above 1.3 feet the table is roughly approximate.



RATING TABLE FOR MILLS RIVER (NORTH FORK) AT PINKBED, N. C., FOR 1906.

Gage Height (Feet).	Discharge (Second-foot).	Gage Height (Feet).	Discharge (Second-foot).	Gage Height (Feet).	Discharge (Second-foot).	Gage Height (Feet).	Discharge (Second-foot).
0.70	35	1.60	175	2.50	440	3.40	830
.80	45	1.70	200	2.60	475	3.50	880
.90	56	1.80	225	2.70	515	3.60	930
1.00	68	1.90	250	2.80	555	3.70	990
1.10	81	2.00	280	2.90	595	3.80	1,050
1.20	95	2.10	310	3.00	640	3.90	1,110
1.30	110	2.20	340	3.10	685	4.00	1,170
1.40	130	2.30	370	3.20	730		
1.50	150	2.40	405	3.30	780		

NOTE.—The above table is applicable only for open-channel conditions. It is based on discharge measurements made during 1904-1906. It is fairly well defined between gage heights 0.5 foot and 1.2 feet.

RATING TABLE FOR MILLS RIVER (NORTH FORK) AT PINKBED, N. C., FOR 1907.

0.60	24	1.10	70	1.60	175	2.10	310
.70	30	1.20	85	1.70	200	2.20	340
.80	37	1.30	103	1.80	225	2.30	370
.90	46	1.40	125	1.90	250	2.40	405
1.00	57	1.50	150	2.00	280	2.50	440

NOTE.—The above table is applicable only for open-channel conditions. It is based upon discharge measurements made during 1904-1907. It is fairly well defined between gage heights 0.5 foot and 1.2 feet.

ESTIMATED MONTHLY DISCHARGE OF MILLS RIVER (NORTH FORK) AT PINKBED, N. C.

Month.	Discharge in Second-feet.			Run-off.	
	Maximum.	Minimum.	Mean.	Second-foot per Square Mile.	Depth in Inches.
1904.					
June.....	59	24	37.8	----	-----
July.....	59	20	27.1	----	-----
August.....	113	24	42.9	----	-----
September.....	59	16	25.3	----	-----
October.....	16	16	16.0	----	-----
November.....	71	16	22.4	----	-----
December.....	71	16	25.3	----	-----
1905.					
January.....	223	22	47.5	1.98	2.28
February.....	103	26	57.0	2.38	2.48
March.....	103	53	68.6	2.86	3.30
April.....	103	48	60.5	2.52	2.81
May.....	93	53	69.8	2.91	3.36
June.....	133	40	65.2	2.72	3.04
July.....	418	63	112.0	4.67	5.38
August.....	123	63	78.3	3.26	3.76
September.....	68	40	49.9	2.08	2.32
October.....	93	35	41.3	1.72	1.98
November.....	35	26	30.1	1.25	1.40
December.....	144	26	65.0	2.71	3.12
The year.....	418	26	62.1	2.59	35.23

ESTIMATED MONTHLY DISCHARGE OF MILLS RIVER (NORTH FORK) AT PINEBED, N. C.—*Con.*

Month.	Discharge in Second-feet.			Run-off.	
	Maxi- mum.	Mini- mum.	Mean.	Second- feet per Square Mile.	Depth in Inches.
1906.					
January.....	1,170	56	185.0	7.71	8.89
February.....	140	68	88.6	3.69	3.84
March.....	225	62	102.0	4.25	4.90
April.....	225	74	102.0	4.25	4.74
May.....	175	35	61.5	2.56	2.95
June.....	990	56	193.0	8.04	8.97
July.....	175	74	100.0	4.17	4.81
August.....	225	68	92.0	3.83	4.42
September.....	685	88	190.0	7.92	8.84
October.....	685	102	221.0	9.21	10.62
November.....	475	81	119.0	4.96	5.53
December.....	225	81	90.4	3.77	4.35
The year.....	1,170	35	129.0	5.03	72.86
1907.					
January.....	150	57	73.3	3.05	3.52
February.....	70	52	56.8	2.37	2.47
March.....	85	46	54.7	2.28	2.63
April.....	150	52	66.2	2.76	3.08
May.....	200	57	86.3	3.60	4.15
June.....	150	46	66.0	2.75	3.07
July.....	57	37	44.8	1.87	2.16
August.....	46	27	33.7	1.40	1.61
September.....	370	27	42.7	1.78	1.99
October.....	37	30	30.5	1.27	1.46
November.....	138	30	45.7	1.90	2.12
December.....	440	37	80.0	3.33	3.84
The year.....	440	27	56.7	2.36	32.10

NOTE.—Values for 1906 are good.

## SOUTH FORK MILLS RIVER NEAR SITTON, N. C.

This station was established May 18, 1904. It is located about 1 mile below Sitton's Mill, Sitton, N. C.

The channel above curves about 90° in 500 feet and is straight for 200 feet below the station. The current is moderately swift, but may be rather sluggish above the station at low stages. Both banks are high and clean and are subject to overflow at extreme high water. The bed of the stream is composed of rock, and is clean and constant. There is but one channel at all stages.

Discharge measurements are made from a foot log about 150 feet above the ford. Owing to the overflowing of the banks discharge measurements cannot be made at high water.

The gage is a vertical timber 10 feet long, spiked to a white-oak tree on the right bank of the river about 40 feet above the foot log. It is read once each day by W. E. Field. Bench marks were established as follows: (1) The center of nails in the root of a white-oak tree on the right bank, 50 feet below the gage; elevation, 5.00 feet. (2) The head of a large nail driven vertically into a notch on the face toward the river of a 20-inch white-oak tree on the right bank, 25 feet above the gage; elevation, 9.94 feet. Elevations refer to the datum of the gage.

## DISCHARGE MEASUREMENTS OF MILLS RIVER (SOUTH FORK) NEAR SITTON, N. C.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1904.						
Apr. 21	M. R. Hall	47	79	1.04	1.00	82
May 18	B. S. Drane	41	79	1.21	1.09	96
July 18	do.	40	68	.72	.81	49
Aug. 18	do.	41	74	.93	.98	69
Oct. 3	do.	41	65	.56	.76	36
Oct. 3	do.	41	65	.54	.76	35
Dec. 9	do.	40	66	.72	.82	47
Dec. 9	do.	40	66	.74	.82	49
1905.						
Apr. 12	B. S. Drane	37	87	1.80	1.44	157
Apr. 12	do.	37	86	1.85	1.44	160
June 22	do.	40	86	1.56	1.28	135
June 22	do.	40	86	1.53	1.29	132
Aug. 29*	do.	58	107	1.38	1.30	149
Nov. 11*	W. E. Hall	45	32	1.78	.84	57
Nov. 11*	do.	24	27	2.26	.84	61
1906.						
June 14	W. E. Hall	55	183	----	3.38	730
Sept. 15	do.	50	100	----	1.61	174
Sept. 15	do.	50	97	----	1.61	170
1907.						
Apr. 3	Warren E. Hall	50	83	1.12	1.22	93
Apr. 3	do.	50	83	1.10	1.22	91
July 15	do.	50	83	1.08	1.27	90
July 15	F. P. Thomas	50	83	1.09	1.27	91
Sept. 19	Warren E. Hall	50	66	.52	.91	34
Sept. 20	do.	50	68	.53	.91	36
Dec. 13	do.	55	85	1.23	1.35	105

\* Measured at different sections.

DAILY GAGE HEIGHT, IN FEET, OF MILLS RIVER (SOUTH FORK) NEAR SITTON, N. C., FOR 1904.

Day.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	1.20	1.05	1.10	1.15	0.75	0.70	0.80
2.....	1.20	.95	.90	1.05	.75	.75	.80
3.....	1.05	.90	.85	1.00	.75	.85	.80
4.....	1.00	.90	.90	1.00	.75	1.25	.80
5.....	.95	.90	.90	1.15	.75	1.00	1.15
6.....	.90	.85	.90	1.00	.75	.90	1.15
7.....	1.65	.85	1.00	.95	.75	.80	.90
8.....	1.10	.85	1.10	.90	.75	.80	.85
9.....	1.00	1.30	1.05	.90	.75	.80	.80
10.....	.95	1.00	1.10	.95	.75	.75	.80
11.....	1.15	.95	1.80	1.10	.75	.75	.80
12.....	1.00	.90	1.65	.95	.75	.75	.80
13.....	.95	.90	1.30	1.00	.75	1.10	.80
14.....	.90	.85	1.10	.90	.70	.90	.70
15.....	1.00	.80	1.05	.90	.70	.80	.80
16.....	.95	.80	1.25	.90	.70	.80	.80
17.....	1.05	.90	1.00	.85	.70	.80	.80
18.....	.95	.80	1.00	.85	.70	.80	.80
19.....	.95	.80	.95	.85	.70	.80	.80
20.....	1.10	1.45	1.00	.80	.70	.80	1.00
21.....	.95	.85	.90	.80	.70	.80	1.00
22.....	1.00	.90	1.10	.80	.70	.80	1.00
23.....	.90	.95	1.00	.80	.70	.80	.80
24.....	.90	.90	.95	.80	.70	.80	.80
25.....	1.10	.90	1.45	.80	.70	.75	.80
26.....	1.10	1.00	1.20	.80	.70	.75	.80
27.....	.90	.90	1.50	.80	.75	.75	1.10
28.....	1.10	.85	1.30	.80	.70	.75	1.40
29.....	1.35	.80	1.10	.80	.70	.75	1.10
30.....	1.20	.85	1.05	.80	.70	.80	1.00
31.....		.85	1.00		.70		1.00

DAILY GAGE HEIGHT, IN FEET, OF MILLS RIVER SOUTH FORK NEAR SITTON, N. C., FOR 1905  
AND 1906.

1905.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	0 95	1 00	1 40	1 10	1 10	1 35	2 15	1 25	1 30	0 90	0 90	0 80
2.....	.90	1 00	1 40	1 10	1 10	1 30	1 65	1 20	1 30	.90	.90	.80
3.....	.90	1 05	1 40	1 10	1 15	1 25	1 40	1 20	1 20	.90	.85	2 50
4.....	1 00	1 10	1 35	1 10	1 20	1 25	1 30	1 25	1 30	1 00	.85	1 25
5.....	1 00	1 10	1 40	1 20	1 75	1 20	1 25	1 20	1 15	.95	.90	1 00
6.....	1 25	1 20	1 35	1 20	1 70	1 15	1 50	1 20	1 15	.90	.90	1 00
7.....	1 25	1 20	1 40	1 10	1 55	1 10	1 25	1 15	1 10	.90	.90	.95
8.....	1 05	1 90	1 40	1 10	1 40	1 10	1 40	1 15	1 10	.90	.85	1 00
9.....	1 30	2 15	1 35	1 20	1 40	1 05	1 25	1 40	1 10	.90	.85	2 60
10.....	1 00	1 45	1 55	1 15	1 35	1 05	1 35	1 50	1 05	.90	.85	1 70
11.....	1 00	1 30	1 60	1 10	1 30	1 05	2 70	2 50	1 05	1 70	.85	1 40
12.....	3 70	1 30	1 55	1 55	1 25	1 05	5 20	2 20	1 05	1 10	.85	1 25
13.....	2 15	1 50	1 50	1 40	1 20	1 05	3 30	1 70	1 05	1 00	.85	1 20
14.....	1 65	1 50	1 45	1 30	1 20	1 00	2 90	1 55	1 00	.95	.85	1 10
15.....	1 40	1 55	1 35	1 25	1 25	1 10	2 45	1 45	1 00	.90	.85	1 40
16.....	1 30	1 50	1 30	1 25	1 50	2 65	2 10	1 40	1 00	.95	.85	1 25
17.....	1 40	1 50	1 30	1 20	1 30	1 80	1 90	1 40	1 00	.90	.85	1 20
18.....	1 30	1 45	1 25	1 15	1 25	1 65	1 80	1 40	1 00	.95	.85	1 20
19.....	1 10	1 10	1 25	1 15	1 20	1 60	1 70	1 40	1 00	.90	.85	1 15
20.....	1 10	1 70	1 20	1 10	1 15	1 55	2 40	1 30	1 00	.90	.90	1 20
21.....	1 05	1 70	1 60	1 10	1 20	1 40	1 60	1 30	1 10	.90	.85	1 80
22.....	1 05	1 65	1 35	1 10	1 20	1 30	1 65	1 25	1 00	.90	.85	1 50
23.....	1 00	1 70	1 30	1 05	1 35	1 30	1 50	1 25	1 00	.90	.80	1 45
24.....	1 00	1 60	1 25	1 05	1 30	1 20	1 45	1 80	.95	.90	.80	1 40
25.....	1 00	1 50	1 25	1 05	1 20	1 15	1 45	1 68	.95	.90	.80	1 30
26.....	1 05	1 50	1 20	1 15	1 65	1 10	1 40	1 65	.95	.90	.80	1 25
27.....	1 05	1 40	1 20	1 15	1 70	1 20	1 35	1 45	.95	.95	.80	1 20
28.....	1 10	1 40	1 15	1 10	2 20	1 10	1 35	1 35	.95	.90	.80	1 30
29.....	1 05	.....	1 15	1 10	1 75	1 10	1 35	1 30	.90	.90	.80	1 35
30.....	1 05	.....	1 20	1 20	1 55	1 40	1 30	1 25	.90	.90	.80	1 25
31.....	1 00	.....	1 10	.....	1 45	.....	1 25	1 20	.....	.90	.....	1 20
1906.												
1.....	1 15	1 80	1 35	2 00	1 45	1 30	1 55	1 60	2 15	3 00	1 65	1 65
2.....	1 15	1 75	1 35	1 85	1 40	1 50	1 50	1 55	1 90	3 80	1 60	1 60
3.....	3 00	1 65	2 30	1 75	1 40	1 90	1 70	1 60	1 85	5 20	1 60	1 60
4.....	2 55	1 60	1 90	1 70	1 40	1 70	1 65	1 60	1 75	4 00	1 60	1 60
5.....	2 00	1 60	1 70	1 65	1 35	2 10	1 56	1 50	2 60	3 20	1 60	1 55
6.....	1 75	1 55	1 60	1 60	1 35	2 00	1 50	1 50	2 35	3 30	1 55	1 60
7.....	1 60	1 50	1 55	1 60	1 35	1 70	1 50	1 55	2 20	2 80	1 55	1 60
8.....	1 50	1 50	1 70	1 55	1 30	1 55	1 65	1 45	2 00	2 65	1 50	1 55
9.....	1 40	1 50	1 55	1 55	1 30	1 70	1 65	1 40	1 90	2 50	1 50	1 50
10.....	1 40	1 45	1 50	1 55	1 30	2 10	1 50	1 40	1 80	2 35	1 50	1 75
11.....	1 35	1 45	1 50	1 50	1 30	1 85	1 45	1 35	1 70	2 30	1 50	1 80
12.....	1 50	1 50	1 45	1 50	1 30	2 40	1 40	1 30	1 70	2 25	1 50	1 60
13.....	1 40	1 45	1 40	1 45	1 25	5 80	1 40	1 40	1 80	2 10	1 45	1 60
14.....	1 50	1 45	1 40	2 50	1 25	3 70	1 90	1 55	1 70	2 05	1 45	1 55
15.....	1 40	1 45	2 05	2 30	1 25	4 20	2 40	1 50	1 65	2 00	1 45	1 50
16.....	1 40	1 40	1 70	1 90	1 25	3 70	2 10	1 45	1 60	1 95	1 45	1 50
17.....	1 35	1 40	1 60	1 80	1 20	2 85	2 10	1 90	1 60	2 00	1 55	1 65
18.....	1 30	1 40	1 55	1 70	1 20	2 45	2 10	1 75	4 00	2 35	4 00	1 60
19.....	1 30	1 35	2 35	1 60	1 20	2 30	2 35	1 55	4 80	2 20	3 90	1 55
20.....	1 30	1 35	2 00	1 60	1 20	2 10	2 10	2 70	3 20	2 05	2 65	1 60
21.....	1 25	1 50	1 80	1 55	1 20	2 00	2 00	1 90	2 65	2 00	2 30	1 60
22.....	5 60	1 50	1 70	1 55	1 20	1 90	1 85	1 80	2 50	1 95	2 10	1 55
23.....	4 30	1 40	1 65	1 50	1 15	1 80	1 75	1 60	2 30	1 90	2 00	1 50
24.....	2 60	1 40	1 60	1 50	1 15	1 80	1 70	1 75	2 30	1 90	1 90	1 50
25.....	2 45	1 40	1 55	1 45	1 15	1 80	1 65	1 55	2 35	1 85	1 85	1 60
26.....	2 40	1 35	1 50	1 40	1 80	1 80	1 90	1 65	2 20	1 80	1 80	1 90
27.....	2 20	1 40	1 55	1 45	2 25	1 65	1 75	1 75	2 25	1 80	1 75	1 60
28.....	2 00	1 35	1 55	1 40	1 80	1 70	1 65	2 40	2 45	1 75	1 70	1 50
29.....	1 90	.....	2 20	1 40	1 50	1 60	1 60	2 90	3 90	1 70	1 70	1 40
30.....	1 85	.....	2 60	1 40	1 40	1 60	1 55	2 30	3 40	1 70	1 65	1 40
31.....	1 85	.....	2 25	.....	1 35	.....	1 55	2 60	.....	1 70	.....	3 20

DAILY GAGE HEIGHT, IN FEET, OF MILLS RIVER (SOUTH FORK) NEAR SITTON, N. C., FOR 1907.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	2.00	1.35	1.30	1.35	1.35	2.30	1.30	1.10	0.95	1.15	1.00	1.25
2.....	1.80	1.35	2.10	1.25	1.30	1.85	1.30	1.10	.95	1.10	1.30	1.20
3.....	1.70	1.35	1.55	1.25	2.20	1.70	1.35	1.10	1.05	1.05	1.15	1.20
4.....	1.70	1.40	1.45	1.20	2.15	1.60	1.30	1.05	1.10	1.05	1.05	1.20
5.....	1.60	1.50	1.40	1.20	1.80	1.55	1.25	1.05	1.10	1.05	1.00	1.25
6.....	1.60	1.40	1.35	1.75	1.70	1.50	1.25	1.10	1.00	1.00	1.00	1.30
7.....	1.55	1.35	1.35	1.45	1.80	1.45	1.20	1.05	1.00	1.00	1.00	1.20
8.....	1.55	1.30	1.40	1.40	1.65	1.60	1.15	1.10	1.00	1.15	1.00	1.10
9.....	1.50	1.30	1.30	1.40	1.60	1.50	1.15	1.05	1.00	1.05	1.00	1.40
10.....	1.50	1.30	1.35	1.35	1.55	1.50	1.15	1.25	1.10	1.00	1.05	2.10
11.....	1.45	1.30	1.35	1.30	1.60	1.40	1.25	1.15	1.05	1.00	1.10	1.50
12.....	1.45	1.30	1.30	1.30	1.50	1.40	1.20	1.25	1.00	1.00	1.05	1.45
13.....	1.45	1.30	1.30	1.30	1.45	1.35	1.25	1.10	.95	1.00	1.05	1.40
14.....	1.40	1.30	1.30	1.30	1.45	1.35	1.15	1.10	.95	1.00	1.00	2.10
15.....	1.40	1.25	1.45	1.25	1.45	1.35	1.30	1.10	.95	1.00	1.00	1.85
16.....	1.40	1.25	1.30	1.25	1.45	1.30	1.35	1.10	1.00	1.00	1.00	1.65
17.....	1.40	1.25	1.30	1.25	1.40	1.30	1.30	1.30	.95	1.00	1.00	1.55
18.....	1.40	1.25	1.30	1.25	1.40	1.25	1.40	1.10	.95	1.00	1.35	1.50
19.....	1.40	1.25	1.30	1.40	1.35	1.25	1.25	1.10	.90	.95	1.20	1.45
20.....	1.45	1.25	1.30	1.25	1.35	1.60	1.15	1.05	.90	.95	1.15	1.40
21.....	1.40	1.20	1.25	1.25	1.30	1.50	1.10	1.05	.90	.95	2.45	1.35
22.....	1.35	1.20	1.25	1.35	1.30	1.35	1.10	1.10	.95	.95	1.85	1.35
23.....	1.35	1.20	1.20	1.80	1.30	1.35	1.15	1.15	4.10	.95	2.00	3.10
24.....	1.35	1.30	1.20	1.50	1.30	1.35	1.15	1.10	1.30	.95	2.10	2.10
25.....	1.30	1.35	1.20	1.40	1.40	1.50	1.40	1.05	1.15	.95	1.70	1.85
26.....	1.35	1.35	1.25	1.40	2.60	1.45	1.20	1.05	1.10	.95	1.50	1.70
27.....	1.30	1.35	1.25	1.50	1.75	1.55	1.15	1.00	1.05	1.05	1.40	1.65
28.....	1.30	1.30	1.20	1.40	1.55	1.55	1.35	1.00	1.35	1.05	1.35	1.60
29.....	1.30	.....	1.20	1.40	1.50	1.40	1.20	1.00	1.40	1.00	1.30	1.50
30.....	1.30	.....	1.20	1.35	1.45	1.30	1.25	1.00	1.20	1.00	1.25	2.45
31.....	1.30	.....	1.30	.....	1.60	.....	1.15	1.00	.....	1.00	.....	2.00

DAILY GAGE HEIGHT, IN FEET, OF MILLS RIVER (SOUTH FORK) NEAR SITTON, N. C., FOR 1908.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1.....	1.80	1.65	1.95	1.60	1.70	1.35	1.15	1.35	1.70	1.25
2.....	1.70	1.55	2.00	1.60	1.65	1.35	1.15	1.30	1.65	1.25
3.....	1.65	1.75	2.00	1.55	1.60	1.35	1.40	1.35	1.60	1.25
4.....	1.60	1.55	1.95	1.50	1.60	1.35	1.70	1.30	1.55	1.25
5.....	1.85	1.40	1.90	1.50	1.55	1.40	2.55	1.25	2.45	1.25
6.....	1.65	1.50	1.90	1.55	1.55	1.40	2.00	1.50	2.10	1.25
7.....	1.65	1.45	1.85	1.50	2.35	1.45	1.95	1.50	1.80	1.20
8.....	1.55	1.40	1.80	1.50	1.85	1.40	1.85	1.40	1.70	1.20
9.....	1.50	1.40	1.75	1.50	1.80	1.35	2.20	1.50	1.65	1.40
10.....	1.50	1.40	1.75	1.50	1.70	1.35	1.90	1.40	1.60	1.90
11.....	2.45	1.45	1.70	1.45	1.65	1.40	1.65	1.35	1.55	1.40
12.....	3.20	1.80	1.80	1.40	1.60	1.30	1.55	1.30	1.50	1.35
13.....	2.30	2.35	1.70	1.40	1.60	1.30	1.45	1.25	1.50	1.30
14.....	2.15	2.45	1.70	1.40	1.55	1.40	1.40	1.20	1.45	1.30
15.....	1.95	6.20	1.65	1.95	1.55	1.40	1.40	1.20	1.40	1.25
16.....	1.85	3.00	1.65	1.75	1.50	1.35	1.50	1.30	1.40	1.25
17.....	1.80	2.55	1.65	1.65	1.70	1.30	1.35	1.45	1.40	1.25
18.....	1.70	2.20	1.60	1.60	1.60	1.30	1.30	1.60	1.35	1.25
19.....	1.65	2.25	1.60	1.60	1.65	1.30	1.30	1.40	1.35	1.25
20.....	1.60	2.10	2.00	1.50	1.55	1.30	1.30	1.45	1.35	1.20
21.....	1.60	2.15	1.85	1.50	1.55	1.45	1.25	1.70	1.30	1.20
22.....	1.60	2.10	1.75	1.50	1.50	1.30	1.25	2.90	1.30	1.35
23.....	1.55	2.00	2.05	1.50	1.45	1.30	1.50	3.10	1.30	2.45
24.....	1.55	1.95	2.30	1.45	1.50	1.25	1.30	3.95	1.30	2.00
25.....	1.60	1.95	2.00	2.70	1.45	1.30	1.25	4.40	1.30	1.65
26.....	1.45	2.05	1.85	2.15	1.40	1.25	1.50	3.15	1.25	1.55
27.....	1.60	1.90	1.80	1.90	1.45	1.20	1.25	2.50	1.25	1.50
28.....	1.45	1.80	1.70	1.80	1.40	1.20	1.40	2.25	1.65	1.75
29.....	1.45	1.85	1.65	1.70	1.40	1.20	1.70	2.00	1.35	2.85
30.....	1.40	.....	1.65	1.80	1.50	1.15	1.60	1.90	1.30	2.40
31.....	1.40	.....	1.60	.....	1.40	.....	1.45	1.80	.....	2.10

RATING TABLE FOR MILLS RIVER (SOUTH FORK) NEAR SITTON, N. C., FROM JUNE 1 TO DECEMBER 31, 1904.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
0.7	22	0.9	62	1.0	82	1.1	102
.8	42						

NOTE.—The above table is applicable only for open-channel conditions. It is based upon eight discharge measurements made during 1904. It is well defined between gage heights 0.75 foot and 1.10 feet, and can only be considered roughly approximate above 1.1 feet. The rating curve is a tangent, the difference being 20 per tenth.

RATING TABLE FOR MILLS RIVER (SOUTH FORK) NEAR SITTON, N. C., FOR 1905.

0.8	55	1.7	206	2.6	375	4.0	670
.9	70	1.8	224	2.7	395	4.2	716
1.0	86	1.9	242	2.8	415	4.4	762
1.1	102	2.0	260	2.9	435	4.6	809
1.2	119	.1	279	3.0	455	4.8	857
1.3	136	2.2	298	3.2	497	5.0	905
1.4	153	2.3	317	3.4	539	5.2	955
1.5	170	2.4	336	3.6	582		
1.6	188	2.5	355	3.8	626		

NOTE.—The above table is based on seven discharge measurements made during 1905. It is well defined between gage heights 0.8 foot and 1.5 feet. The table has been extended beyond these limits. Above 1.5 feet the table is roughly approximate.

RATING TABLE FOR MILLS RIVER (SOUTH FORK) NEAR SITTON, N. C., FOR 1906.

Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).	Gage Height (Feet).	Discharge (Second- feet).
1.10	90	1.90	250	2.70	480	3.50	780
1.20	107	2.00	275	2.80	515	3.60	825
1.30	125	2.10	300	2.90	550	3.70	870
1.40	145	2.20	325	3.00	585	3.80	915
1.50	165	2.30	355	3.10	620	3.90	960
1.60	185	2.40	385	3.20	660	4.00	1,005
1.70	205	2.50	415	3.30	700	4.20	1,100
1.80	225	2.60	445	3.40	740	4.40	1,200

NOTE.—The above table is applicable only for open-channel conditions. It is based on discharge measurements made during 1904–1906. It is well defined between gage heights 0.7 foot and 1.7 feet. Above gage height 4.1 feet the rating curve is a tangent, the difference being 50 per tenth.

RATING TABLE FOR MILLS RIVER (SOUTH FORK) NEAR SITTON, N. C., FOR 1907.

0.90	35	1.80	215	2.70	480	3.60	825
1.00	51	1.90	240	2.80	515	3.70	870
1.10	68	2.00	265	2.90	550	3.80	915
1.20	86	2.10	295	3.00	585	3.90	960
1.30	105	2.20	325	3.10	620	4.00	1,005
1.40	125	2.30	355	3.20	660	4.10	1,050
1.50	146	2.40	385	3.30	700		
1.60	168	2.50	415	3.40	740		
1.70	191	2.60	445	3.50	780		

NOTE.—The above table is applicable only for open-channel conditions. It is based upon discharge measurements made during 1906 and 1907. It is well defined between gage heights 0.7 foot and 1.7 feet.

ESTIMATED MONTHLY DISCHARGE OF MILLS RIVER (SOUTH FORK) NEAR SITTON, N. C.

[Drainage area, 40.5 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maxi- mum.	Mini- mum.	Mean.	Second- feet per Square Mile.	Depth in Inches.
1904.					
June.....	212	62	92.0	....	....
July.....	172	42	65.5	....	....
August.....	242	52	104.0	....	....
September.....	262	42	69.0	....	....
October.....	32	22	26.5	....	....
November.....	132	22	46.3	....	....
December.....	162	22	61.0	....	....
1905.					
January.....	604	62	126.0	3.11	3.58
February.....	288	86	159.0	3.93	4.09
March.....	233	102	146.0	3.60	4.15
April.....	179	94	112.0	2.77	3.09
May.....	298	102	151.0	3.73	4.30
June.....	385	86	134.0	3.31	3.69
July.....	955	128	236.0	5.83	6.72
August.....	355	110	159.0	3.93	4.53
September.....	136	70	93.9	2.32	2.59
October.....	206	70	77.7	1.92	2.21
November.....	70	55	61.7	1.52	1.70
December.....	375	55	141.0	3.48	4.01
The year.....	955	55	133.0	3.29	44.66



MONTHLY DISCHARGE OF MILLS RIVER (SOUTH FORK) NEAR SITTON, N. C.—*Continued.*  
 [Drainage area, 40.5 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maxi- mum.	Mini- mum.	Mean.	Second- feet per Square Mile.	Depth in Inches.
1906.					
January.....	1,800	98	306.0	7.56	8.72
February.....	225	135	161.0	3.98	4.14
March.....	445	135	216.0	5.33	6.14
April.....	415	145	197.0	4.86	5.42
May.....	340	98	137.0	3.38	3.90
June.....	1,900	125	378.0	9.33	10.41
July.....	385	145	218.0	5.38	6.20
August.....	550	125	222.0	5.48	6.32
September.....	1,400	185	403.0	9.95	11.10
October.....	1,600	205	414.0	10.22	11.78
November.....	1,000	155	260.0	6.42	7.16
December.....	660	145	197.0	4.86	5.60
The year.....	1,900	98	259.0	6.40	86.89
1907.					
January.....	265	105	139.0	3.43	3.95
February.....	146	86	106.0	2.62	2.73
March.....	295	86	113.0	2.79	3.22
April.....	215	86	118.0	2.91	3.25
May.....	445	105	165.0	4.07	4.69
June.....	355	96	144.0	3.56	3.97
July.....	125	68	92.5	2.28	2.63
August.....	105	51	66.8	1.65	1.90
September.....	1,050	35	92.2	2.28	2.54
October.....	77	43	52.9	1.31	1.51
November.....	400	51	108.0	2.67	2.98
December.....	620	68	178.0	4.40	5.07
The year.....	1,050	35	115.0	2.91	38.44

NOTE.—Values for 1906 are excellent.

LITTLE RIVER AT CALHOUN, N. C.

This station was formerly used for miscellaneous measurements, but was equipped with a gage on May 4, 1907. It is located at a wooden wagon bridge about  $\frac{1}{2}$  mile above the mouth of the river, which is a tributary of the French Broad River.

The vertical gage is attached to a birch tree about 300 yards above the bridge.

Discharge measurements are made from the wagon bridge, supported by crib abutments and a central bent. The current is rather slow at low stage and is also irregular. Banks may overflow at high stages. The bed is sandy and shifting.

The bench mark is the top of the upstream end of the first wooden cross-beam from the left end of the bridge; elevation, 13.20 feet.

## DISCHARGE MEASUREMENTS OF LITTLE RIVER AT CALHOUN, N. C.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1904.						
July 19	B. S. Drane.....	36	43	1.16	0.59	50
Aug. 17	do.....	37	73	1.27	1.00	93
Dec. 8	do.....	33	67	1.28	1.09	86
1907.						
May 4	Warren E. Hall.....	42	104	1.90	2.00	198
July 16	do.....	36	63	1.52	1.20	96
Sept. 21	do.....	34	49	1.04	.80	51
Dec. 16	do.....	45	158	2.57	3.18	408

NOTE.—Gage heights of 1904 measurements not the same data as the 1907 gage.

## DAILY GAGE HEIGHT, IN FEET, OF LITTLE RIVER AT CALHOUN, N. C., FOR 1907.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....		3.25	1.25	0.90	0.80	1.00		1.40
2.....		2.00	1.20	.90	.80	1.00	1.50	1.35
3.....		1.70	1.15	.90	1.00	1.00		1.30
4.....	2.00	1.50	1.10	.80	1.00	.90		1.30
5.....	1.80	1.50	1.10	.90	.90	.90	.90	1.45
6.....	1.80	1.40	1.00	.90	.90	1.00	.90	1.30
7.....	2.10	1.35	.90	1.00	.80	1.50	.90	1.20
8.....	1.90	1.70	.90	1.00	1.00	1.10	.80	1.90
9.....	1.80	1.45	.80	.90	.90	1.00	.80	1.40
10.....	1.70	1.70	.90	.90	.90	1.00	1.50	4.40
11.....	1.80	1.45	1.90	1.55	.80	.90	1.00	3.00
12.....	1.70	1.40	1.30	1.20	.80	.90	1.00	2.70
13.....	1.60	1.30	1.25	1.00	.80	.80	1.00	3.60
14.....	1.50	1.25	1.30	1.00	.80	(*)	1.00	7.10
15.....	1.60	1.25	1.25	1.50	.80	(*)	.90	4.50
16.....	1.60	1.20	1.20	1.20	.80	(*)	.90	3.15
17.....	1.50	1.20	1.15	1.00	.80	(*)	.90	2.85
18.....	1.40	1.15	1.20	1.30	.80	(*)	2.85	2.50
19.....	1.40	1.10	1.20	1.20	.80	(*)	1.80	2.10
20.....	1.30	1.10	1.15	1.40	(*)	(*)	4.20	2.00
21.....	1.30	1.15	1.10	1.10	(*)	(*)	3.40	1.95
22.....	1.30	1.10	1.00	1.00	1.00	(*)	2.60	1.80
23.....	1.30	1.60	.90	1.00	5.40	(*)	2.70	8.20
24.....	1.30	1.30	1.30	1.10	2.00	(*)	5.20	4.50
25.....	1.25	1.30	1.20	1.00	1.30	(*)	2.95	4.10
26.....	2.20	1.30	1.10	.90	1.10	(*)	2.30	3.50
27.....	1.50	2.30	1.00	.90	.90	(*)	2.00	3.20
28.....	1.40	1.30	1.00	.80	1.00	(*)	1.80	2.50
29.....	1.35	2.00	.90	.80	1.40	(*)	1.50	2.25
30.....	1.30		1.00	.80	1.00	(*)	1.20	4.50
31.....	1.40		1.00	.80		(*)		3.65

\*Gage out of water.

DAILY GAGE HEIGHT, IN FEET, OF LITTLE RIVER AT CALHOUN, N. C., FOR 1908.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1.....	3 00	1 90	2 65	2 20	3 40	1 50	17.....	2 60	3 80	1 90	3 35	3 00	1 40
2.....	2 65	2 00	2 60	2 10	3 20	1 45	18.....	2 50	3 70	1 85	2 75	2 00	1 30
3.....	2 45	2 10	2 55	2 00	3 00	1 40	19.....	2 30	3 30	1 90	2 50	2 50	1 20
4.....	2 20	2 10	2 50	2 00	2 70	1 35	20.....	2 10	3 10	2 35	2 40	2 10	1 15
5.....	2 70	2 30	2 35	1 90	2 45	2 50	21.....	2 00	3 00	2 50	2 25	1 85	1 30
6.....	2 45	2 15	2 30	2 00	2 30	1 70	22.....	2 00	2 90	3 00	2 20	1 75	1 25
7.....	2 50	2 10	2 20	2 30	2 65	1 55	23.....	1 95	2 80	4 40	2 15	1 70	1 25
8.....	2 30	2 00	2 15	2 00	2 35	1 45	24.....	1 90	2 75	5 80	2 10	2 00	1 35
9.....	2 15	2 40	2 10	2 00	2 15	1 40	25.....	1 85	2 70	4 10	5 20	1 90	1 30
10.....	2 00	2 90	2 10	1 90	2 00	1 55	26.....	1 90	3 70	3 20	3 40	1 75	1 25
11.....	4 20	3 50	2 45	1 55	1 90	1 50	27.....	1 85	3 50	2 75	3 00	1 60	1 20
12.....	3 10	3 90	2 20	1 90	1 80	1 45	28.....	1 90	3 00	2 55	2 90	1 55	1 15
13.....	4 20	4 50	2 10	1 70	1 80	1 50	29.....	1 90	2 90	2 40	2 80	1 60	1 10
14.....	3 55	5 80	2 00	1 70	1 75	1 60	30.....	1 80	.....	2 30	3 60	1 70	1 10
15.....	3 30	10 00	2 00	4 20	1 70	1 55	31.....	1 80	.....	2 25	.....	1 55	.....
16.....	2 80	8 40	2 00	3 40	1 70	1 50							

RATING TABLE FOR LITTLE RIVER AT CALHOUN, N. C., FOR 1907 AND 1908.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
0 80	51	1 40	119	2 00	190	2 60	296
.85	56	1 45	125	2 05	206	2 65	307
.90	61	1 50	131	2 10	214	2 70	316
.95	66	1 55	137	2 15	222	2 75	325
1 00	71	1 60	143	2 20	230	2 80	334
1 05	77	1 65	150	2 25	238	2 85	343
1 10	83	1 70	157	2 30	246	2 90	352
1 15	89	1 75	164	2 35	254	2 95	361
1 20	95	1 80	171	2 40	262	3 00	370
1 25	101	1 85	178	2 45	271		
1 30	107	1 90	185	2 50	280		
1 35	113	1 95	192	2 55	289		

## DAVIDSONS RIVER NEAR DAVIDSONS RIVER, N. C.

This station was established May 19, 1904. It is located at English Bridge, about 2 miles from Davidsons River, N. C., and about 500 feet above the mouth of Avery Creek.

The channel is straight for about 500 feet above and below the station. The current is moderately swift. The right bank is high, rocky, wooded, and is not subject to overflow. The left bank is low, but is not subject to overflow. The bed of the stream is composed of rock, mostly loose boulders and shingle, and is clean and permanent. There is but one channel at all stages.

Discharge measurements are made from the single-span wooden highway bridge, with log abutments. The floor of the bridge is about 12 feet above low water. The initial point for soundings is the edge of the wooden crib abutment on the upstream side at the left bank. The gage is a vertical timber 10 feet long, spiked to the downstream side of a maple tree on the left bank, 40 feet below the bridge. It is referred to bench marks as follows: (1) Two wire nails driven into the down-

stream side of the tree to which the gage is attached; elevation, 4.00 feet. (2) A cross cut on the top of solid rock at edge of water, 8 feet below the bridge, at right bank; elevation, 1.48 feet. (3) The top of the head of a large nail driven horizontally into an 18-inch white-oak tree on the left bank, just upstream from the end of the bridge; the nail is in the quarter of the tree downstream and away from the river, and about 5 feet above the root of the tree; elevation, 14.12 feet. Elevations refer to datum of the gage.

## DISCHARGE MEASUREMENTS OF DAVIDSONS RIVER NEAR DAVIDSONS RIVER, N. C.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1904.						
Apr. 20	M. R. Hall	65	105	0.79	1.00	83
May 19	B. S. Drane	66	108	.77	1.05	84
July 19	do.	64	88	.46	.78	41
July 19	do.	64	86	.47	.78	41
Aug. 17	do.	68	99	.72	.99	71
Oct. 4	do.	63	86	.47	.79	40
Dec. 8	do.	63	88	.57	.85	51
Dec. 8	do.	63	88	.62	.85	55
1905.						
Apr. 13	B. S. Drane	71	128	1.03	1.25	132
Apr. 13	do.	71	128	1.04	1.24	133
June 23	do.	67	116	.98	1.16	113
June 23	do.	67	116	.99	1.16	115
Aug. 30	do.	66	111	.85	1.08	94
Aug. 30	do.	66	111	.88	1.08	98
Nov. 14	W. E. Hall	64	90	.42	.75	38
1906.						
Mar. 6	W. E. Hall	67	124	---	1.25	129
June 15	do.	77	236	---	2.74	1,020
1907.						
Apr. 5	Warren E. Hall	68	98	0.69	0.90	68
May 4	do.	70	128	1.18	1.30	151
July 16	do.	70	109	.85	1.05	93
Sept. 21	do.	75	88	.38	.72	34
Dec. 14	do.	70	156	1.76	1.62	275

DAILY GAGE HEIGHT, IN FEET, OF DAVIDSON'S RIVER NEAR DAVIDSON'S RIVER, N. C., FOR 1904.

Day.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	1.05	0.85	1.05	1.10	0.80	0.75	0.75
2.....	1.10	.85	1.00	1.10	.80	.75	.75
3.....	1.05	.90	.90	1.05	.80	.90	.80
4.....	1.00	.90	1.00	1.05	.80	1.20	.80
5.....	.95	.80	.90	1.05	.80	1.00	1.15
6.....	.95	.80	.90	1.00	.80	.80	1.05
7.....	1.15	.85	.90	1.00	.80	.80	.90
8.....	1.05	.90	1.10	.95	.80	.80	.85
9.....	1.00	.85	1.00	1.00	.80	.75	.85
10.....	.95	.85	1.45	.95	.75	.75	.85
11.....	1.10	.90	1.50	1.00	.75	.75	.80
12.....	1.00	.90	1.40	1.00	.75	.75	.80
13.....	1.00	.90	1.25	1.00	.75	1.10	.80
14.....	.95	.90	1.10	.95	.75	.85	.80
15.....	.90	.80	1.05	.95	.75	.80	.80
16.....	.90	.75	1.05	.90	.75	.80	.80
17.....	1.00	.85	1.00	.90	.75	.80	.80
18.....	.95	.80	.95	.90	.75	.80	.80
19.....	.95	.80	.90	.90	.75	.75	.80
20.....	.95	1.00	.90	.85	.75	.75	.80
21.....	.90	1.05	.95	.85	.75	.75	.80
22.....	.95	.90	1.05	.85	.75	.75	.80
23.....	.90	.90	1.15	.85	.75	.75	.80
24.....	.90	.85	1.25	.85	.75	.75	.80
25.....	.90	.90	1.65	.85	.75	.75	.85
26.....	.90	.85	1.60	.85	.75	.75	.80
27.....	.85	.85	1.55	.85	.75	.75	1.30
28.....	.85	.80	1.40	.85	.75	.75	1.30
29.....	.95	1.00	1.25	.80	.75	.75	1.10
30.....	.90	.90	1.20	.80	.75	.80	1.05
31.....		.95	1.10		.75		1.00

DAILY GAGE HEIGHT, IN FEET, OF DAVIDSON'S RIVER NEAR DAVIDSON'S RIVER, N. C., FOR 1905 AND 1906.

1905.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	0.90	0.90	1.20	1.05	1.05	1.15	1.70	1.05	1.05	0.80	0.80	0.75
2.....	.90	.90	1.20	1.05	1.05	1.10	1.30	1.05	1.10	.80	.80	.75
3.....	.95	.90	1.20	1.00	1.20	1.10	1.15	1.05	1.05	.80	.80	1.55
4.....	.90	1.10	1.20	1.00	1.20	1.05	1.10	1.05	1.05	.90	.80	1.10
5.....	.90	1.10	1.20	1.15	1.35	1.05	1.10	1.10	1.00	.85	.80	.95
6.....	1.25	1.15	1.15	1.10	1.50	1.00	1.25	1.05	1.00	.80	.80	.95
7.....	1.10	1.05	1.20	1.05	1.40	1.00	1.15	1.05	1.00	.80	.80	.90
8.....	1.00	1.05	1.15	1.00	1.30	1.00	1.25	1.35	1.00	.80	.80	1.20
9.....	.95	1.40	1.25	1.15	1.25	.95	1.15	1.20	.95	.80	.80	1.80
10.....	.95	1.35	1.55	1.05	1.20	.95	1.10	1.60	.95	.90	.80	1.35
11.....	.95	1.15	1.30	1.05	1.15	.95	2.60	2.15	.95	1.30	.80	1.20
12.....	1.60	1.30	1.30	1.40	1.15	.95	2.95	2.00	1.00	.90	.80	1.10
13.....	1.60	1.70	1.25	1.25	1.10	.90	2.05	1.75	.95	.85	.75	1.05
14.....	1.40	1.30	1.25	1.20	1.10	.90	1.90	1.60	.95	.85	.75	1.00
15.....	1.25	1.30	1.20	1.15	1.05	.90	1.70	1.50	.90	.85	.75	1.45
16.....	1.20	1.30	1.20	1.10	1.30	1.35	1.60	1.40	.90	.85	.75	1.15
17.....	1.15	1.15	1.15	1.10	1.15	1.15	1.50	1.35	.90	.80	.75	1.10
18.....	1.10	1.15	1.15	1.05	1.10	1.10	1.43	1.30	.90	.80	.75	1.05
19.....	1.05	1.05	1.10	1.05	1.10	1.30	1.45	1.30	.90	.80	.75	1.00
20.....	1.05	1.60	1.10	1.05	1.05	1.30	1.40	1.25	.90	.80	.85	1.15
21.....	1.00	1.55	1.30	1.00	1.10	1.20	1.35	1.25	.90	.80	.80	1.50
22.....	1.00	1.50	1.20	1.00	1.05	1.30	1.30	1.20	.90	.80	.75	1.30
23.....	1.00	1.45	1.15	1.00	1.15	1.15	1.25	1.20	.85	.80	.75	1.25
24.....	.95	1.35	1.15	1.00	1.15	1.10	1.25	1.20	.85	.80	.75	1.20
25.....	.95	1.30	1.10	1.00	1.20	1.05	1.20	1.20	.85	.82	.80	1.15
26.....	1.00	1.30	1.10	1.15	1.50	1.00	1.20	1.20	.85	.87	.75	1.10
27.....	1.00	1.25	1.10	1.05	1.45	1.00	1.15	1.15	.85	.85	.75	1.10
28.....	1.00	1.25	1.05	1.00	1.45	.95	1.20	1.10	.85	.80	.75	1.05
29.....	.95	-----	1.05	1.00	1.30	.98	1.15	1.10	.80	.80	.75	1.20
30.....	.95	-----	1.10	1.10	1.20	1.10	1.15	1.10	.80	.80	.75	1.10
31.....	.90	-----	1.05	-----	1.20	-----	1.10	1.05	-----	.80	-----	1.10
1906.												
1.....	1.05	1.45	1.10	1.50	1.10	1.05	1.25	1.40	1.60	2.10	1.20	1.20
2.....	1.00	1.40	1.10	1.45	1.10	1.20	1.50	1.40	1.50	2.60	1.20	1.20
3.....	2.50	1.35	1.90	1.40	1.10	1.30	1.65	1.45	1.45	3.20	1.20	1.20
4.....	1.90	1.30	1.45	1.35	1.10	1.25	1.60	1.40	1.40	2.50	1.20	1.15
5.....	1.55	1.30	1.30	1.30	1.10	1.65	1.45	1.40	1.95	2.10	1.15	1.15
6.....	1.40	1.30	1.25	1.30	1.10	1.50	1.40	1.45	1.75	2.10	1.15	1.15
7.....	1.30	1.25	1.20	1.25	1.10	1.30	1.35	1.42	1.60	1.90	1.15	1.25
8.....	1.25	1.25	1.35	1.25	1.05	1.20	1.30	1.35	1.55	1.80	1.15	1.15
9.....	1.25	1.25	1.25	1.30	1.05	1.15	1.40	1.30	1.75	1.75	1.10	1.10
10.....	1.20	1.20	1.20	1.25	1.05	1.55	1.30	1.30	1.40	1.65	1.10	1.50
11.....	1.15	1.20	1.20	1.20	1.00	1.45	1.25	1.25	1.35	1.65	1.10	1.35
12.....	1.25	1.25	1.15	1.20	1.00	1.75	1.25	1.20	1.35	1.60	1.10	1.30
13.....	1.25	1.20	1.15	1.20	1.00	3.50	1.20	1.30	1.40	1.55	1.10	1.20
14.....	1.30	1.20	1.15	1.70	1.00	2.20	1.20	1.25	1.30	1.50	1.10	1.20
15.....	1.20	1.20	1.70	1.70	1.00	2.50	2.15	1.40	1.30	1.50	1.10	1.15
16.....	1.25	1.15	1.35	1.50	1.00	2.10	1.85	1.30	1.30	1.45	1.15	1.10
17.....	1.20	1.15	1.30	1.40	.95	2.00	1.95	1.60	1.25	1.45	1.15	1.25
18.....	1.15	1.15	1.25	1.35	.95	1.80	1.85	1.50	2.70	1.70	2.85	1.25
19.....	1.15	1.10	1.60	1.30	1.00	1.70	1.70	1.60	3.00	1.55	2.45	1.35
20.....	1.15	1.10	1.50	1.30	1.00	1.60	1.60	1.50	2.00	1.50	1.80	1.25
21.....	1.15	1.45	1.40	1.25	.95	1.50	1.50	1.40	1.80	1.45	1.60	1.20
22.....	4.10	1.25	1.35	1.25	.95	1.45	1.45	1.35	1.70	1.40	1.50	1.20
23.....	2.60	1.15	1.30	1.20	.95	1.40	1.40	1.35	1.85	1.40	1.40	1.15
24.....	2.05	1.15	1.25	1.20	.95	1.45	1.40	1.45	1.75	1.35	1.40	1.20
25.....	1.80	1.15	1.25	1.20	.90	1.40	1.40	1.35	1.80	1.35	1.30	1.85
26.....	1.75	1.10	1.20	1.15	1.70	1.35	1.65	1.45	1.70	1.30	1.30	1.90
27.....	1.60	1.20	1.30	1.15	1.60	1.30	1.70	1.40	1.75	1.30	1.30	1.95
28.....	1.55	1.10	1.20	1.15	1.40	1.25	1.65	1.35	2.00	1.30	1.25	1.20
29.....	1.50	-----	1.75	1.15	1.25	1.25	1.50	1.50	2.50	1.25	1.20	1.10
30.....	1.50	-----	2.00	1.15	1.15	1.25	1.45	1.50	2.60	1.25	1.20	1.20
31.....	1.50	-----	1.70	-----	1.10	-----	1.40	1.80	-----	1.25	-----	1.95

DAILY GAGE HEIGHT, IN FEET, OF DAVIDSON'S RIVER NEAR DAVIDSON'S RIVER, N. C., FOR 1907.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	1.50	1.10	1.50	0.95	1.00	1.90	0.85	0.80	0.75	0.95	0.75	0.95
2.....	1.35	1.05	1.20	.90	1.00	1.25	.80	.80	.70	.90	1.10	.95
3.....	1.30	1.00	1.10	.90	1.40	1.25	.80	.80	.80	.90	.85	.95
4.....	1.25	1.25	1.10	.90	1.45	1.10	.80	.80	.80	.85	.80	.95
5.....	1.20	1.20	1.05	.90	1.20	1.05	.80	.75	.75	.85	.80	1.00
6.....	1.20	1.10	1.00	1.60	1.15	1.00	.80	.85	.70	.80	.75	1.20
7.....	1.20	1.10	1.00	1.10	1.35	1.00	.80	.75	.70	.80	.75	1.05
8.....	1.15	1.05	1.10	1.05	1.25	1.50	.80	.80	.80	.90	.75	.90
9.....	1.15	1.05	1.00	1.05	1.20	1.05	.80	.75	.75	.80	.75	1.25
10.....	1.10	1.00	1.10	1.00	1.20	1.00	.80	.75	.90	.80	.80	1.00
11.....	1.10	1.00	1.05	1.00	1.20	1.00	.80	1.25	.85	.80	(*)	1.25
12.....	1.10	1.00	1.05	1.00	1.10	1.00	.80	.95	.75	.80	(*)	1.05
13.....	1.10	1.00	1.00	.95	1.10	.95	.90	.80	.75	.75	(*)	1.10
14.....	1.05	.95	1.10	.95	1.10	.95	.80	.90	.75	.75	(*)	1.70
15.....	1.05	.95	1.05	1.00	1.15	.95	1.30	.90	.75	.75	(*)	1.40
16.....	1.05	.95	1.00	.95	1.05	.90	1.10	.90	.75	.75	(*)	1.30
17.....	1.10	.95	1.00	.95	1.05	.90	1.00	.90	.75	.75	.75	1.20
18.....	1.00	.95	1.00	.90	1.05	.90	.90	.90	.75	.75	1.20	1.25
19.....	1.00	.95	1.00	1.15	1.00	.90	.90	.85	.75	.75	.95	1.20
20.....	1.20	.95	1.00	.95	.95	.90	.90	.80	.75	.75	.80	1.10
21.....	1.05	.90	.95	.95	.95	.90	.85	.90	.70	.75	1.70	1.10
22.....	1.00	.90	.95	1.20	.95	.90	.80	.90	.90	.75	1.25	1.50
23.....	1.00	.90	.90	1.30	1.40	.90	.80	.90	2.70	.75	1.60	2.10
24.....	1.00	1.00	.90	1.20	1.00	.90	1.15	.85	1.05	.75	1.60	1.50
25.....	1.00	1.10	.90	1.10	1.00	.90	1.25	.80	.95	.75	1.30	1.40
26.....	1.00	1.05	1.05	1.05	1.40	.85	.85	.80	.90	.75	1.20	1.30
27.....	1.00	1.00	.95	1.20	1.05	.85	.80	.80	.85	.90	1.10	1.25
28.....	1.00	1.00	.95	1.05	1.00	.95	1.05	.75	1.30	.80	1.05	1.75
29.....	.95	.....	.90	1.00	.95	1.00	.90	.75	1.15	.75	1.00	1.20
30.....	.95	.....	.90	1.00	.95	.85	.85	.75	1.00	.75	1.00	2.20
31.....	.95	.....	1.00	.....	1.20	.....	.80	.75	.....	.75	.....	1.45

\*No record on book or on card.

DAILY GAGE HEIGHT, IN FEET, OF DAVIDSON'S RIVER NEAR DAVIDSON'S RIVER, N. C., FOR 1908.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.
1.....	1.35	1.25	1.45	1.25	1.30	1.15	.95	.95	1.25	1.00
2.....	1.30	1.20	1.40	1.25	1.30	1.15	1.00	.95	1.20	.95
3.....	1.25	1.35	1.40	1.20	1.25	1.10	1.25	.95	1.20	.95
4.....	1.20	1.45	1.35	1.20	1.20	1.10	1.75	1.00	1.15	.90
5.....	1.35	1.10	1.35	1.20	1.20	1.35	1.80	1.20	1.65	.90
6.....	1.30	1.20	1.35	1.20	1.20	1.15	1.40	1.10	1.45	.90
7.....	1.30	1.15	1.30	1.15	1.20	1.20	1.50	1.05	1.40	.90
8.....	1.20	1.15	1.30	1.15	1.40	1.15	1.45	1.10	1.30	.90
9.....	1.15	1.10	1.30	1.15	1.35	1.15	1.35	1.15	1.25	1.30
10.....	1.10	1.15	1.25	1.10	1.30	1.10	1.30	1.05	1.25	1.20
11.....	2.00	1.25	1.25	1.10	1.25	1.10	1.20	1.00	1.20	1.00
12.....	2.10	1.55	1.45	1.10	1.20	1.10	1.15	1.10	1.15	1.00
13.....	1.65	1.70	1.25	1.10	1.20	1.15	1.15	1.00	1.10	.95
14.....	1.50	1.80	1.25	1.10	1.20	1.15	1.15	.95	1.10	.95
15.....	1.45	3.20	1.20	1.70	1.15	1.50	1.15	.95	1.05	.95
16.....	1.40	2.05	1.20	1.45	1.15	1.15	1.10	.95	1.05	.95
17.....	1.35	1.80	1.20	1.35	1.50	1.10	1.05	.95	1.05	.95
18.....	1.30	1.65	1.15	1.30	1.30	1.10	1.05	.95	1.00	.90
19.....	1.25	1.60	1.15	1.25	1.35	1.05	1.05	1.10	1.00	.90
20.....	1.25	1.55	1.35	1.20	1.20	1.05	1.00	1.10	1.00	.90
21.....	1.25	1.50	1.40	1.20	1.20	1.10	1.00	1.05	1.00	.90
22.....	1.20	1.45	1.30	1.15	1.15	1.10	1.00	2.00	1.00	.90
23.....	1.20	1.40	1.75	1.15	1.10	1.05	1.10	1.55	1.00	1.80
24.....	1.15	1.40	1.80	1.15	1.15	1.05	1.00	2.50	1.00	1.30
25.....	1.30	1.35	1.55	2.25	1.15	1.05	1.10	2.65	1.00	1.15
26.....	1.15	1.40	1.45	1.60	1.15	1.00	1.05	2.00	.95	1.10
27.....	1.25	1.30	1.40	1.45	1.25	1.00	1.00	1.65	.95	1.05
28.....	1.15	1.35	1.35	1.40	1.15	1.00	1.05	1.55	1.20	1.30
29.....	1.10	1.30	1.25	1.35	1.45	.95	1.00	1.45	1.10	2.30
30.....	1.10	-----	1.25	1.40	1.30	.95	1.00	1.35	1.00	1.45
31.....	1.10	-----	1.25	-----	1.20	-----	.95	1.30	-----	1.30

RATING TABLE FOR DAVIDSON'S RIVER NEAR DAVIDSON'S RIVER, N. C., FROM JUNE 1, 1904, TO DECEMBER 31, 1905.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
0.60	24	1.30	146	2.00	342	2.70	587
.70	32	1.40	171	2.10	374	2.80	626
.80	44	1.50	197	2.20	407	2.90	666
.90	60	1.60	224	2.30	441	3.00	707
1.00	79	1.70	252	2.40	476		
1.10	100	1.80	281	2.50	512		
1.20	122	1.90	311	2.60	549		

NOTE.—The above table is based on fifteen discharge measurements made during 1904-1905. It is well defined between gage heights 0.7 foot and 1.3 feet. Beyond these limits the table is uncertain.

RATING TABLE FOR DAVIDSON'S RIVER NEAR DAVIDSON'S RIVER, N. C., FOR 1903 AND 1907

0.70	32	1.40	176	2.10	520	2.80	1,075
.80	44	1.50	210	2.20	590	2.90	1,170
.90	60	1.60	250	2.30	660	3.00	1,265
1.00	79	1.70	295	2.40	735	3.20	1,460
1.10	100	1.80	345	2.50	815	3.40	1,660
1.20	122	1.90	400	2.60	895		
1.30	147	2.00	460	2.70	985		

NOTE.—The above table is applicable only for open-channel conditions. It is based on discharge measurements made during 1904-1906. It is well defined between gage heights 0.7 foot and 1.3 feet. Above gage height 3.1 feet the rating curve is a tangent, the difference being 100 per tenth.



ESTIMATED MONTHLY DISCHARGE OF DAVIDSON'S RIVER NEAR DAVIDSON'S RIVER, N. C.  
[Drainage area, 41 square miles.]

Month.	Discharge in Second-feet.			Run-off.		Rainfall.
	Maximum.	Minimum.	Mean.	Second-feet per Square Mile.	Depth in Inches.	Inches.*
1904.						
June.....	111	52	73.0	1.78	1.99	4.51
July.....	90	44	55.4	1.35	1.56	2.54
August.....	238	60	113.0	2.76	3.18	5.51
September.....	100	44	67.3	1.64	1.83	1.38
October.....	44	38	39.7	.968	1.12	.....
November.....	122	38	47.0	1.15	1.28	2.11
December.....	146	38	59.8	1.46	1.68	4.04
1905.						
January.....	549	60	104.0	2.54	2.93	5.49
February.....	252	60	135.0	3.29	3.43	6.73
March.....	210	90	119.0	2.90	3.34	2.95
April.....	171	79	95.7	2.33	2.60	4.30
May.....	197	90	126.0	3.07	3.54	10.19
June.....	158	60	94.0	2.29	2.56	3.89
July.....	686	90	186.0	4.54	5.23	8.94
August.....	390	90	147.0	3.59	4.14	6.81
September.....	100	44	66.5	1.62	1.81	2.40
October.....	146	44	50.8	1.24	1.43	3.72
November.....	52	38	41.3	1.01	1.13	.18
December.....	281	38	114.0	2.78	3.20	9.71
The year.....	686	38	107.7	2.60	35.34	65.31

\*At Brevard.

MONTHLY DISCHARGE OF DAVIDSON'S RIVER NEAR DAVIDSON'S RIVER, N. C.  
[Drainage area, 41 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maximum.	Minimum.	Mean.	Second-feet per Square Mile.	Depth in Inches.
1907.					
January.....	210	70	101.0	2.46	2.84
February.....	134	60	82.8	2.02	2.10
March.....	210	60	85.5	2.09	2.41
April.....	250	60	89.9	2.19	2.44
May.....	193	70	108.0	2.63	3.03
June.....	400	52	88.9	2.17	2.42
July.....	147	44	60.4	1.47	1.70
August.....	134	38	51.1	1.25	1.44
September.....	985	32	82.7	2.02	2.25
October.....	70	38	44.1	1.08	1.24
November.....	295	38	84.7	2.07	2.31
December.....	590	60	166.0	4.05	4.67
The year.....	985	32	87.1	2.12	28.85

NOTE.—November 11-16 discharge interpolated.

## AVERY CREEK AT DAVIDSON'S RIVER, N. C.

This station was established as a bench-mark station May 19, 1904. It is located about one-fourth mile above the junction of Avery Creek with Davidson's River, and a less distance from the regular gaging station on the latter stream. Discharge measurements are made from the foot log just above the wagon bridge, the section being smoother than that under bridge.

## DISCHARGE MEASUREMENTS OF AVERY CREEK AT DAVIDSON'S RIVER, N. C., IN 1904.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage (Height Feet).	Discharge (Second- feet).
May 19	B. S. Drane.....	18	16.0	0.91	1.79	14.0
July 19	do.....	18	13.0	.64	1.63	8.0
Aug. 17	do.....	18	14.5	1.00	1.77	14.5
Oct. 4	do.....	18	12.5	.55	1.62	6.8
Dec. 8	do.....	18	12.0	.52	1.66	6.3

## WATAUGA RIVER NEAR ELIZABETHTON, TENN.

This station was established May 11, 1903. It is located on the Virginia and Southwestern Railway bridge at Siam, about 4 miles from Elizabethton, Tenn.

The channel is straight for 1,000 feet above and below the station. The right bank is high and will overflow only at flood stages. All water will, however, pass under the bridge and the trestle approach. The left bank is a perpendicular masonry abutment and will not overflow. The section underneath the bridge is smooth and consists of sand, silt, and some small rocks, and does not appear to be shifting. At ordinary stages the channel is divided into three parts by the bridge piers. At flood stages there is an additional flood channel on the right bank.

Discharge measurements are made from the lower side of the bridge. The bridge crosses the river at an angle of about  $14^{\circ}$  with the normal to the direction of the current.

A standard chain gage is fastened on the downstream side of the middle span on the inside of the guard-rail, 140 feet from the left abutment; length of chain, 22.66 feet. The gage is read once each day by J. B. Nave. Bench marks were established as follows: (1) A standard copper bolt set in the cap of the abutment on the left bank, upstream side of the bridge; elevation, 21.11 feet. (2) The upper edge of the plate connecting the lower bracing system with the lower chord and floor beam opposite the middle of the gage box on the downstream side of the bridge; this floor beam is the fourth from the left end of the middle span; elevation, 19.60 feet. Elevations refer to the datum of the gage.

## DISCHARGE MEASUREMENTS OF WATAUGA RIVER NEAR ELIZABETHTON, TENN.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1903.						
Feb. 10	E. W. Myers.....	233	1,002	1.09	2.80	1,095
May 11	do.....	229	762	.87	2.00	665
July 13	B. S. Drane.....	223	662	.35	1.61	234
Aug. 15	do.....	229	653	.31	1.38	205
Aug. 15	M. R. Hall.....	205	620	.53	1.38	328
Sept. 5	B. S. Drane.....	228	633	.36	1.25	226
Sept. 5*	do.....	108	369	.67	1.25	247
Oct. 17	do.....	228	625	.33	1.20	204
Nov. 23	do.....	228	633	.34	1.26	214
1904.						
Feb. 25	B. S. Drane.....	229	788	.68	2.03	537
Feb. 25	do.....	229	784	.65	2.01	507
Mar. 25	do.....	234	1,183	2.12	3.70	2,507
April 30	do.....	230	751	.96	2.15	720
July 11	J. M. Giles.....	189	594	.68	1.60	403
Aug. 11	B. S. Drane.....	231	760	.99	2.13	754
Oct. 19†	do.....	109	311	.51	1.06	158
Oct. 19	do.....	228	517	.30	1.06	156
1905.						
Feb. 4	B. S. Drane.....	205	688	0.44	1.42	296
Feb. 4	do.....	205	685	.45	1.41	297
May 13	W. E. Hall.....	209	1,127	2.01	3.61	2,263
June 17	B. S. Drane.....	207	644	.84	1.78	543
Aug. 23	W. E. Hall.....	204	704	.95	1.93	670
Dec. 22	F. A. Murray.....	207	787	1.12	2.24	879
1906.						
Oct. 22	F. A. Murray.....	213	1,079	1.82	3.17	1,967
1907.						
June 18	Warren E. Hall.....	212	874	1.35	2.48	1,181
Aug. 10	do.....	209	717	.79	1.77	570

\*Boat three-fourths mile above station.

†Boat one-half mile above station.

DAILY GAGE HEIGHT, IN FEET, OF WATAUGA RIVER NEAR ELIZABETHTON, TENN., FOR 1903.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....		1.80	1.75	1.55	1.30	1.15	1.15	1.20
2.....		1.90	1.65	1.75	1.25	1.15	1.15	1.20
3.....		1.80	1.65	2.20	1.25	1.10	1.20	1.20
4.....		1.85	1.75	1.75	1.30	1.10	1.25	1.20
5.....		1.80	1.75	2.20	1.25	1.10	1.45	1.25
6.....		2.45	1.75	1.90	1.20	1.10	1.45	1.20
7.....		2.70	1.85	1.70	1.20	1.10	1.35	1.20
8.....		2.30	1.70	1.60	1.20	1.20	1.20	1.20
9.....		2.05	1.55	1.50	1.20	1.70	1.20	1.20
10.....		2.00	1.55	1.45	1.20	1.30	1.20	1.20
11.....	1.95	1.90	1.65	1.50	1.60	1.25	1.20	1.20
12.....	1.95	2.00	1.60	1.55	1.40	1.20	1.20	1.15
13.....	1.90	1.85	3.00	1.50	1.25	1.20	1.15	1.20
14.....	2.00	1.80	3.00	1.40	1.20	1.15	1.20	1.40
15.....	1.95	1.75	2.10	1.40	1.20	1.15	1.20	1.25
16.....	1.95	1.75	1.80	1.35	1.20	1.15	1.20	1.15
17.....	1.85	1.70	1.75	1.40	1.85	1.20	1.30	1.15
18.....	1.80	1.65	1.70	1.40	1.60	1.30	2.20	1.15
19.....	1.85	1.60	1.60	1.35	1.35	1.30	1.50	1.15
20.....	1.80	1.60	1.65	1.35	1.25	1.25	1.30	1.30
21.....	1.80	1.65	1.55	1.35	1.25	1.20	1.30	2.00
22.....	1.80	1.65	1.55	1.30	1.25	1.20	1.25	1.60
23.....	1.75	1.65	1.50	1.30	1.20	1.20	1.25	1.40
24.....	1.70	1.70	1.50	1.30	1.20	1.15	1.25	1.40
25.....	1.70	1.60	1.45	1.25	1.20	1.15	1.25	1.40
26.....	1.70	1.50	1.40	1.25	1.20	1.15	1.25	2.10
27.....	1.65	1.85	1.40	1.25	1.20	1.15	1.20	1.40
28.....	1.65	1.80	1.40	1.25	1.20	1.10	1.15	1.70
29.....	1.65	2.10	1.35	1.20	1.20	1.10	1.20	1.50
30.....	1.75	1.95	1.40	1.25	1.15	1.15	1.20	1.50
31.....	1.80		1.50	1.30		1.20		1.30

DAILY GAGE HEIGHT, IN FEET, OF WATAUGA RIVER NEAR ELIZABETHTON, TENN., FOR 1904  
AND 1905.

1904.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	1.30	1.50	2.35	2.05	2.10	2.50	2.00	2.20	1.40	1.15	1.05	1.25
2.....	1.30	1.70	2.60	2.00	2.00	3.00	1.80	2.20	1.70	1.15	1.05	1.30
3.....	1.25	1.60	2.30	2.00	2.70	2.30	1.70	2.10	1.60	1.15	1.10	1.35
4.....	1.25	1.50	2.30	1.90	3.70	2.20	1.60	2.00	1.50	1.15	1.20	1.35
5.....	1.20	1.40	2.15	1.80	2.70	2.10	2.70	1.60	1.60	1.15	1.50	1.60
6.....	1.15	1.60	2.00	1.75	2.40	2.00	1.90	1.75	1.50	1.10	1.50	2.30
7.....	1.20	1.50	4.45	1.80	2.20	2.20	1.70	1.75	1.45	1.10	1.30	1.80
8.....	1.20	2.70	3.90	1.70	2.90	1.95	1.60	1.70	1.40	1.10	1.20	1.50
9.....	1.20	2.20	3.10	2.20	3.50	1.80	1.50	1.65	1.30	1.10	1.15	1.40
10.....	1.20	1.90	2.60	1.90	3.00	1.80	1.70	1.50	1.30	1.10	1.10	1.50
11.....	1.30	1.80	2.80	1.85	2.80	1.80	1.60	2.15	1.25	1.10	1.10	1.60
12.....	1.50	1.65	2.30	1.90	2.50	1.80	1.60	1.90	1.25	1.10	1.10	1.60
13.....	1.50	1.65	2.30	1.80	2.40	1.70	1.55	1.70	1.30	1.10	1.40	1.50
14.....	1.40	1.65	2.20	1.70	2.20	1.70	1.50	1.65	1.30	1.10	1.45	1.50
15.....	1.20	1.70	2.15	1.70	2.25	1.60	1.45	1.70	1.35	1.10	1.50	1.40
16.....	1.35	1.70	2.10	1.80	2.10	1.50	1.40	2.60	1.30	1.10	1.50	1.40
17.....	1.80	1.60	2.00	1.85	2.00	1.60	1.40	2.00	1.25	1.10	1.45	1.40
18.....	1.70	1.60	1.95	1.75	2.60	1.60	1.40	1.70	1.20	1.10	1.45	1.35
19.....	1.70	1.60	2.00	1.70	2.40	1.50	1.40	1.60	1.20	1.10	1.40	1.35
20.....	1.40	1.70	2.00	1.70	2.10	1.50	1.30	1.60	1.20	1.05	1.35	1.30
21.....	1.50	1.70	2.00	1.65	2.00	1.60	1.30	2.00	1.20	1.05	1.35	1.30
22.....	1.70	2.45	2.35	1.65	1.90	1.70	1.40	1.80	1.15	1.05	1.40	1.30
23.....	3.00	2.40	4.00	1.60	1.80	1.60	1.50	1.60	1.15	1.05	1.40	1.30
24.....	2.10	2.20	5.20	1.60	1.75	1.50	1.55	1.50	1.15	1.05	1.40	1.30
25.....	1.90	2.05	4.00	1.55	1.90	1.45	1.85	1.50	1.15	1.05	1.35	1.50
26.....	1.90	2.00	3.10	1.65	1.35	1.45	1.80	1.45	1.15	1.05	1.35	1.60
27.....	1.50	2.60	2.85	1.90	1.30	1.50	1.50	1.45	1.15	1.05	1.30	1.65
28.....	1.50	2.75	2.60	2.30	1.20	1.70	1.60	1.45	1.15	1.05	1.30	1.70
29.....	1.55	2.40	2.40	2.30	1.20	2.80	1.50	1.40	1.15	1.05	1.30	1.65
30.....	1.40	.....	2.20	2.20	1.20	2.20	1.50	1.40	1.15	1.05	1.30	1.60
31.....	1.40	.....	2.10	.....	2.30	.....	1.60	1.40	.....	1.05	.....	1.60
1905.												
1.....	1.60	1.50	2.40	1.70	1.80	1.80	1.65	3.00	1.70	1.30	1.30	1.20
2.....	1.60	1.45	2.40	1.60	1.80	1.80	1.65	2.50	1.60	1.50	1.30	1.30
3.....	1.70	1.40	2.30	1.60	1.90	1.70	1.65	2.40	1.70	1.40	1.30	4.30
4.....	1.70	1.30	2.30	1.70	1.90	1.70	1.65	2.40	1.75	1.40	1.30	2.60
5.....	1.65	1.40	2.30	1.95	2.20	1.65	2.10	2.60	1.80	1.30	1.30	2.00
6.....	1.65	1.50	2.20	2.70	2.60	1.60	2.20	2.70	1.80	1.30	1.30	1.60
7.....	1.70	1.80	2.20	2.50	3.50	1.60	2.00	3.00	1.80	1.30	1.30	1.60
8.....	1.80	1.80	2.30	2.30	3.10	1.50	1.90	3.90	1.70	1.30	1.30	1.60
9.....	1.80	1.90	2.70	2.30	2.90	1.50	1.80	4.00	1.60	1.30	1.30	1.65
10.....	1.70	2.00	3.10	2.30	2.80	1.50	1.60	4.50	1.55	1.30	1.30	2.90
11.....	1.75	3.80	3.10	2.30	2.60	1.50	1.70	4.50	1.50	1.40	1.30	2.30
12.....	3.60	2.80	3.00	3.00	2.90	1.60	8.40	4.70	1.70	1.50	1.20	2.20
13.....	3.70	3.70	2.70	3.00	3.50	1.60	6.50	4.40	1.60	1.40	1.20	2.00
14.....	3.00	2.80	2.20	2.80	5.60	1.55	4.80	3.90	1.60	1.40	1.20	1.90
15.....	2.50	2.70	2.20	2.30	4.80	1.50	2.90	3.20	1.55	1.35	1.20	1.80
16.....	2.30	2.50	2.10	2.20	5.40	1.50	2.60	3.00	1.55	1.35	1.20	1.80
17.....	2.20	2.20	2.00	2.00	4.60	1.50	2.60	2.60	1.50	1.30	1.20	1.80
18.....	2.00	1.80	2.00	2.00	3.50	1.60	2.50	2.50	1.50	1.30	1.20	1.90
19.....	1.90	1.80	1.95	1.95	3.00	2.60	2.50	2.40	1.45	1.40	1.20	2.00
20.....	1.90	2.00	1.90	1.90	2.80	2.50	2.40	2.30	1.40	1.40	1.20	2.20
21.....	1.90	4.00	1.90	1.80	2.70	1.90	2.40	2.20	1.70	1.40	1.20	3.10
22.....	1.90	3.90	1.85	1.90	2.70	1.85	2.30	2.20	1.60	1.40	1.20	2.30
23.....	1.85	3.60	1.80	1.90	2.90	1.80	2.20	2.00	1.50	1.35	1.20	2.20
24.....	1.85	3.20	1.70	1.85	2.30	1.80	2.10	2.00	1.50	1.35	1.20	2.20
25.....	1.80	3.00	1.90	1.80	2.20	1.80	2.00	2.20	1.40	1.35	1.20	2.00
26.....	1.80	2.70	1.85	1.80	2.00	1.75	1.80	2.50	1.40	1.40	1.20	1.95
27.....	1.75	2.60	1.70	1.70	1.90	1.70	1.60	2.40	1.35	1.40	1.20	1.90
28.....	1.75	2.50	1.60	1.70	1.90	1.70	1.80	2.30	1.30	1.40	1.20	1.85
29.....	1.75	.....	1.60	1.90	1.90	1.70	2.50	2.00	1.30	1.40	1.20	1.80
30.....	1.75	.....	1.80	1.90	1.85	1.70	4.50	1.85	1.30	1.35	1.20	1.80
31.....	1.50	.....	1.70	.....	1.80	.....	3.80	1.70	.....	1.35	.....	1.70

DAILY GAGE HEIGHT, IN FEET, OF WATAUGA RIVER NEAR ELIZABETHTON, TENN., FOR 1906  
AND 1907.

1906.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
(Day)												
1.....	1.65	2.60	1.85	2.80	1.70	1.50	1.70	2.40	4.10	4.20	1.80	1.70
2.....	1.60	2.50	1.80	2.70	1.70	1.50	1.65	2.60	3.00	4.20	1.75	1.70
3.....	1.60	2.30	1.80	2.60	1.70	1.50	1.60	2.50	2.70	4.50	1.70	1.80
4.....	3.60	2.20	2.60	2.10	2.00	1.50	1.60	2.40	3.00	4.30	1.70	1.80
5.....	2.80	2.10	2.60	2.00	3.00	1.45	1.55	2.35	4.00	3.20	1.70	1.75
6.....	2.60	2.00	2.50	2.20	3.50	1.45	1.55	2.30	3.90	2.90	1.70	1.80
7.....	2.40	2.00	2.40	2.20	3.40	1.40	1.50	2.00	3.70	2.70	1.65	1.80
8.....	2.30	2.00	2.80	2.00	3.00	1.45	1.50	1.80	3.50	2.40	1.65	1.60
9.....	2.00	2.00	2.60	2.00	2.90	1.45	2.20	1.70	3.40	2.20	1.60	1.60
10.....	1.70	2.00	2.50	1.90	2.70	1.40	1.70	1.65	3.20	2.10	1.60	1.60
11.....	1.70	1.95	1.90	1.90	2.50	1.40	1.50	1.60	3.00	2.00	1.75	1.60
12.....	1.80	1.95	1.70	1.85	2.00	3.00	1.50	1.60	2.80	1.90	2.00	1.60
13.....	2.00	1.90	1.70	1.80	1.90	3.50	1.45	1.80	2.40	1.90	2.00	1.60
14.....	2.90	1.90	1.70	1.80	1.85	3.00	1.40	2.00	2.20	1.90	1.90	1.60
15.....	2.60	2.10	2.60	5.00	1.80	2.80	3.00	2.30	1.90	1.90	1.75	1.60
16.....	2.60	2.00	3.00	3.60	1.80	2.70	2.60	2.60	1.85	1.80	1.65	1.60
17.....	2.50	1.90	2.40	3.40	1.70	2.70	2.40	4.20	1.80	1.80	1.60	1.65
18.....	2.40	1.80	2.40	3.00	1.65	2.60	2.00	2.70	1.70	1.90	2.00	2.10
19.....	2.20	1.80	2.30	2.50	1.60	2.40	1.80	2.60	5.00	6.00	7.00	2.00
20.....	2.20	1.90	2.30	2.40	1.60	2.30	2.00	2.30	4.20	5.60	4.60	2.00
21.....	2.10	2.40	2.20	2.20	1.55	2.00	2.30	2.30	2.70	4.00	3.40	1.90
22.....	7.30	2.40	2.30	2.15	1.50	1.70	2.20	2.30	3.10	3.15	2.90	1.85
23.....	7.40	2.10	2.40	2.10	1.50	1.65	2.00	2.30	3.00	2.70	2.60	1.80
24.....	4.80	2.10	2.40	2.10	1.50	2.40	1.90	2.20	2.80	2.60	2.50	1.80
25.....	3.60	2.00	2.35	2.00	1.45	2.55	1.85	2.20	2.50	2.40	2.40	1.80
26.....	3.10	2.00	2.20	1.90	1.40	2.20	1.80	2.40	2.30	2.30	2.30	1.85
27.....	2.90	1.90	2.10	1.80	1.80	2.00	2.90	2.60	2.15	2.20	2.15	1.90
28.....	2.90	1.90	2.00	1.80	1.90	1.90	2.30	4.50	2.15	2.00	2.00	3.20
29.....	2.80	-----	2.00	1.80	1.70	1.80	2.20	6.80	4.70	1.90	1.90	4.40
30.....	2.80	-----	3.40	1.75	1.60	1.70	2.10	5.40	4.30	1.85	1.70	3.90
31.....	2.70	-----	2.90	-----	1.55	-----	2.40	5.30	-----	1.80	-----	3.60
1907.												
1.....	3.40	1.60	2.60	1.65	1.90	1.80	(*)	1.70	1.50	1.90	1.45	(*)
2.....	3.00	1.55	2.90	1.60	1.90	5.50	1.80	1.65	1.70	1.80	(*)	1.85
3.....	2.65	1.55	2.70	1.60	1.90	4.90	1.75	1.60	1.75	1.60	1.40	1.70
4.....	2.40	1.55	2.65	1.70	2.00	3.70	(*)	1.60	1.70	1.70	1.40	1.60
5.....	2.25	1.60	2.60	1.75	2.10	3.10	1.65	1.60	(*)	2.50	1.40	1.50
6.....	2.20	1.60	2.55	1.80	2.10	2.70	1.60	1.60	1.60	2.30	1.35	1.55
7.....	2.20	1.55	2.50	1.90	2.00	2.60	1.60	1.65	1.55	(*)	1.30	1.50
8.....	2.15	1.55	2.40	1.95	1.95	3.50	1.55	1.70	1.65	1.70	1.30	(*)
9.....	2.10	1.55	2.60	2.00	1.90	3.40	1.50	1.75	1.70	1.65	1.35	1.50
10.....	2.00	1.50	2.80	2.30	1.80	3.30	1.50	1.75	1.70	1.65	1.80	1.50
11.....	1.95	(*)	3.10	2.20	1.75	3.10	1.60	1.70	1.65	1.60	2.30	1.45
12.....	1.85	1.50	2.90	2.20	1.75	2.90	1.80	1.60	2.40	1.55	2.00	1.50
13.....	1.80	1.50	2.60	2.15	1.70	2.70	2.30	1.50	1.95	1.50	1.90	1.60
14.....	1.70	1.50	2.50	2.10	1.65	5.00	3.20	1.45	1.70	1.50	1.80	2.30
15.....	1.70	(*)	2.45	2.10	1.60	3.30	2.30	1.40	(*)	1.50	1.70	2.60
16.....	1.65	(*)	2.40	2.10	1.55	(*)	2.30	1.30	1.60	1.45	1.65	2.60
17.....	1.60	1.50	2.30	2.20	1.50	2.50	2.30	1.80	1.55	1.45	1.65	2.50
18.....	1.70	1.50	2.25	2.20	1.45	2.50	2.20	1.90	1.50	1.45	1.65	2.35
19.....	1.80	1.50	2.20	2.30	1.50	2.45	2.10	1.85	1.50	1.40	1.60	2.10
20.....	1.75	1.50	2.00	2.25	1.60	2.40	2.10	1.75	(*)	1.40	1.60	2.00
21.....	1.75	1.50	1.95	2.20	1.55	2.40	(*)	1.65	1.70	1.40	1.60	1.80
22.....	1.70	1.60	1.90	2.30	1.55	2.35	2.05	1.60	1.80	1.35	(*)	1.90
23.....	1.70	1.75	1.85	3.00	1.60	(*)	2.00	1.75	5.20	1.35	2.00	4.50
24.....	1.65	2.20	1.80	2.90	1.65	2.20	1.90	1.80	4.80	1.30	2.40	4.40
25.....	1.60	2.30	1.80	2.50	1.60	1.90	1.85	1.75	3.80	1.30	2.50	4.20
26.....	1.60	2.35	1.75	2.30	1.60	2.60	1.80	1.70	3.50	1.30	2.50	4.00
27.....	1.60	2.40	1.75	2.20	1.50	2.90	1.75	1.65	3.20	1.30	2.35	3.60
28.....	1.60	2.60	1.70	2.15	1.50	2.30	1.70	1.60	2.90	1.30	2.25	3.00
29.....	1.55	-----	1.70	2.10	1.40	2.10	2.00	1.60	2.80	(*)	2.10	2.70
30.....	1.50	-----	1.65	2.00	1.40	-----	1.90	1.55	2.40	1.50	2.00	3.60
31.....	1.50	-----	1.70	-----	1.50	-----	1.90	1.55	-----	1.50	-----	3.50

\*No reading.

RATING TABLE FOR WATAUGA RIVER NEAR ELIZABETHTON, TENN., FROM MAY 11 TO DECEMBER 31, 1903.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
1.1	200	1.6	430	2.1	708	2.6	993
1.2	231	1.7	485	2.2	765	2.7	1,050
1.3	273	1.8	540	2.3	822	2.8	1,107
1.4	323	1.9	596	2.4	879	2.9	1,164
1.5	376	2.0	652	2.5	936	3.0	1,221

NOTE.—Lower part of curve is uncertain on account of low velocity of stream.

RATING TABLE FOR WATAUGA RIVER NEAR ELIZABETHTON, TENN., FOR 1904.

1.0	135	2.0	650	3.0	1,530	4.0	3,025
1.1	170	2.1	720	3.1	1,645	4.2	3,390
1.2	210	2.2	790	3.2	1,765	4.4	3,770
1.3	250	2.3	865	3.3	1,895	4.6	4,160
1.4	295	2.4	945	3.4	2,035	4.8	4,560
1.5	345	2.5	1,030	3.5	2,180	5.0	4,960
1.6	400	2.6	1,120	3.6	2,335	5.2	5,360
1.7	460	2.7	1,215	3.7	2,500		
1.8	520	2.8	1,315	3.8	2,670		
1.9	585	2.9	1,420	3.9	2,845		

NOTE.—The above table is applicable only for open-channel conditions. It is based upon twelve discharge measurements made during 1903 and 1904. It is not well defined. The table has been extended above gage height 3.7 feet. This table is very uncertain above gage height 3.0 feet.

RATING TABLE FOR WATAUGA RIVER NEAR ELIZABETHTON, TENN., FOR 1905 AND 1906.

1.20	205	2.40	1,010	3.60	2,330	5.60	5,200
1.30	250	2.50	1,100	3.70	2,460	5.80	5,520
1.40	300	2.60	1,190	3.80	2,590	6.00	5,840
1.50	355	2.70	1,285	3.90	2,720	6.20	6,180
1.60	410	2.80	1,385	4.00	2,850	6.40	6,520
1.70	470	2.90	1,490	4.20	3,110	6.60	6,860
1.80	535	3.00	1,600	4.40	3,390	6.80	7,200
1.90	605	3.10	1,710	4.60	3,670	7.00	7,540
2.00	680	3.20	1,825	4.80	3,970	8.00	9,340
2.10	755	3.30	1,945	5.00	4,270	9.00	11,240
2.20	835	3.40	2,070	5.20	4,570		
2.30	920	3.50	2,200	5.40	4,880		

NOTE.—The above table is based on discharge measurements made during 1904-1906. It is well defined between gage heights 1.4 feet and 3.7 feet.

RATING TABLE FOR WATAUGA RIVER NEAR ELIZABETHTON, TENN., FOR 1907.

1.30	290	2.40	1,090	3.50	2,230	4.60	3,670
1.40	345	2.50	1,180	3.60	2,350	4.70	3,820
1.50	400	2.60	1,275	3.70	2,470	4.80	3,970
1.60	460	2.70	1,370	3.80	2,595	4.90	4,120
1.70	525	2.80	1,470	3.90	2,720	5.00	4,270
1.80	595	2.90	1,570	4.00	2,850	5.20	4,570
1.90	670	3.00	1,675	4.10	2,980	5.40	4,880
2.00	750	3.10	1,780	4.20	3,110	5.60	5,200
2.10	830	3.20	1,890	4.30	3,250		
2.20	915	3.30	2,000	4.40	3,390		
2.30	1,000	3.40	2,115	4.50	3,530		

NOTE.—The above table is applicable only for open-channel conditions. It is based upon discharge measurements made during 1904-1907.

## ESTIMATED MONTHLY DISCHARGE OF WATAUGA RIVER NEAR ELIZABETHTON, TENN.

[Drainage area, 408 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maximum.	Minimum.	Mean.	Second-feet per Square Mile.	Depth in Inches.
1903.					
May 11-31.....	652	457	544	1.33	1.04
June.....	1,050	376	573	1.40	1.57
July.....	1,221	298	489	1.20	1.38
August.....	765	231	368	.90	1.04
September.....	568	216	268	.66	.73
October.....	485	200	233	.57	.66
November.....	765	216	270	.66	.74
December.....	708	216	300	.74	.85
1904.					
January.....	1,550	190	372	0.912	1.05
February.....	1,265	295	601	1.47	1.59
March.....	5,360	618	1,357	3.33	3.84
April.....	865	372	552	1.35	1.51
May.....	2,500	210	873	2.14	2.47
June.....	1,530	320	579	1.42	1.58
July.....	1,215	250	417	1.02	1.18
August.....	1,120	295	496	1.22	1.41
September.....	460	190	254	.623	.695
October.....	190	152	166	.407	.469
November.....	345	152	258	.632	.705
December.....	865	230	349	.855	.986
The year.....	5,360	152	523	1.28	17.48
1905.					
January.....	2,460	355	712	1.75	2.02
February.....	2,850	250	1,140	2.79	2.90
March.....	1,710	410	827	2.03	2.34
April.....	1,600	410	765	1.88	2.10
May.....	5,200	535	1,558	3.82	4.40
June.....	1,190	355	494	1.21	1.35
July.....	10,100	410	1,509	3.70	4.27
August.....	3,820	470	1,536	3.76	4.34
September.....	535	250	389	.953	1.06
October.....	355	250	283	.694	.800
November.....	250	205	222	.544	.607
December.....	3,250	205	769	1.88	2.07
The year.....	10,100	205	850	2.08	28.29
1906.					
January.....	8,260	410	1,640	4.02	4.64
February.....	1,190	535	732	1.79	1.86
March.....	2,070	470	959	2.35	2.71
April.....	4,270	502	1,000	2.45	2.73
May.....	2,200	300	728	1.78	2.05
June.....	2,200	300	765	1.87	2.09
July.....	1,600	300	668	1.64	1.89
August.....	7,200	410	1,300	3.19	3.68
September.....	4,270	470	1,750	4.29	4.79
October.....	5,840	535	1,560	3.82	4.40
November.....	7,540	410	1,020	2.50	2.79
December.....	3,390	410	776	1.90	2.19
The year.....	8,260	300	1,070	2.63	35.82

NOTE.—As values for 1906 are based on the only measurement made during the year, they should be rated as fair, but it is probable that good would be a better rating.



ESTIMATED MONTHLY DISCHARGE OF WATAUGA RIVER NEAR ELIZABETHTON, TENN.—Continued.  
[Drainage area, 408 square miles.]

Month.	Discharge in Second-feet.			Run-off.	
	Maxi- mum.	Mini- mum.	Mean.	Second- feet per Square Mile.	Depth in Inches.
1907.					
January.....	2,120	400	717	1.76	2.03
February.....	1,520	400	557	1.37	1.43
March.....	1,780	492	1,000	2.45	2.82
April.....	1,680	460	864	2.12	2.36
May.....	830	345	530	1.30	1.50
June.....	5,040	595	1,680	4.12	4.60
July.....	1,890	400	708	1.74	2.01
August.....	595	290	494	1.21	1.40
September.....	4,570	400	1,030	2.52	2.81
October.....	1,180	290	457	1.12	1.29
November.....	1,180	290	612	1.50	1.67
December.....	3,530	372	1,210	2.97	3.42
The year.....	5,040	290	822	2.02	27.34

WATAUGA RIVER AT BUTLER, TENN.

This station was established on August 14, 1900.

The gage rod was a vertical scale graduated to feet and tenths and spiked to a tree on the right bank of the stream about 100 yards below the highway bridge, from which the gagings were made.

The section at this station was favorable for making accurate measurements of discharge, as the bed of the stream was of smooth, hard sand, the course of the river straight for some distance above and below the station, and the current velocities sufficient and well distributed in the section, while the banks were high and not subject to overflow except during extraordinary freshets.

This station was maintained up to the end of 1901, though the bridge from which gagings were made was swept away in the great flood of May, 1901, and no gagings were possible after that date.

DISCHARGE MEASUREMENTS OF WATAUGA RIVER AT BUTLER, TENN.

Date.	Hydrographer.	Gage Height (Feet).	Discharge (Second- feet).
1900.			
July 30	E. W. Myers.....	1.37	434
Aug. 7	L. V. Branch.....	.90	214
Aug. 17	do.....	.84	166
Oct. 6	E. W. Myers.....	1.12	238
Nov. 7	L. V. Branch.....	2.20	591
Dec. 28	E. W. Myers.....	1.40	311
1901.			
Jan. 17	E. W. Myers.....	2.10	574
April 12	do.....	2.55	849

DAILY GAGE HEIGHT, IN FEET, OF WATAUGA RIVER AT BUTLER, TENN., FOR 1900.

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....		0.90	0.90	5.60	2.00	17.....		4.50	0.70	1.50	1.50
2.....		.90	.90	5.00	2.40	18.....	0.90	4.00	.70	1.50	1.50
3.....		.90	.90	2.30	2.40	19.....	.80	3.20	.70	1.40	1.50
4.....		.90	.90	2.10	5.00	20.....	.80	2.70	.70	1.40	1.50
5.....		.90	.90	2.50	4.00	21.....	1.10	1.10	.70	1.40	1.50
6.....		.90	.90	2.30	3.50	22.....	1.60	1.00	.70	1.40	1.50
7.....		.80	.90	2.00	3.00	23.....	1.30	1.10	15.00	1.40	1.50
8.....		.80	.90	2.00	2.50	24.....	1.20	.90	9.00	1.40	1.50
9.....		.80	.90	1.90	2.10	25.....	.90	.90	4.50	1.40	1.50
10.....		.80	.90	1.90	1.90	26.....	.90	.90	2.50	5.40	1.50
11.....		.80	.90	1.90	1.50	27.....	.90	.90	2.00	4.00	1.50
12.....		.80	.80	1.80	1.50	28.....	.90	.90	4.50	3.00	1.50
13.....		.80	.80	1.60	1.50	29.....	.80	.90	4.00	3.00	1.50
14.....	1.30	1.70	.90	1.50	1.50	30.....	1.90	.90	4.00	2.40	1.50
15.....	.80	1.70	.80	1.50	1.50	31.....	1.40		3.20		1.50
16.....	.70	3.10	.70	1.50	1.50						

DAILY GAGE HEIGHT, IN FEET, OF WATAUGA RIVER AT BUTLER, TENN., FOR 1901.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1.....	2.00	1.60	1.50	3.00	3.00	3.00	6.40	2.00	3.50	2.80	2.60	2.60
2.....	2.00	1.60	1.50	8.00	3.00	3.00	4.10	2.00	3.10	2.80	2.60	2.60
3.....	2.00	1.60	1.50	7.00	3.00	3.00	3.50	2.00	2.70	2.80	2.60	2.60
4.....	1.80	2.80	1.50	6.30	3.00	3.00	2.80	2.00	2.70	2.80	3.50	2.60
5.....	1.60	2.00	1.50	5.00	3.00	3.00	2.50	2.00	2.70	2.80	3.10	2.60
6.....	1.50	2.00	1.50	4.50	3.00	3.00	2.50	8.00	2.70	2.80	3.00	2.60
7.....	1.50	1.80	1.70	3.40	3.60	3.00	2.50	5.10	2.70	2.70	2.80	2.60
8.....	1.50	1.60	2.00	3.00	4.60	11.00	2.30	3.40	2.70	2.70	2.80	2.60
9.....	1.50	3.50	2.00	2.50	3.50	6.30	2.00	2.80	2.70	2.60	2.80	2.60
10.....	1.90	3.00	2.00	2.50	3.20	4.50	2.00	2.50	2.70	2.60	2.80	4.70
11.....	2.00	2.80	4.00	2.50		4.50	2.00	3.50	2.70	2.60	2.80	3.60
12.....	7.00	2.80	3.00	2.50	2.80	3.60	2.00	7.60	3.00	2.60	2.80	3.10
13.....	5.00	2.40	2.00	2.50	2.80	3.40	2.00	5.30	3.00	4.10	2.80	3.00
14.....	4.30	2.00	2.00	2.50	2.60	3.00	2.00	4.50	2.70	4.00	2.80	9.50
15.....	3.60	2.00	2.00	2.50	2.60	3.00	2.00	4.70	2.70	3.60	2.80	8.00
16.....	3.00	2.00	2.00	2.50	2.60	3.00	2.00	6.70	4.50	3.60	2.80	6.00
17.....	2.60	2.00	2.00	2.50	2.60	2.50	2.00	6.70	3.60	3.20	2.80	4.50
18.....	2.60	1.80	2.00	2.50	2.60	2.50	2.00	5.90	3.10	3.20	2.80	3.60
19.....	2.60	1.60	1.80	2.50	2.80	2.50	2.00	4.60	3.00	3.20	2.80	3.00
20.....	2.10	1.00	1.60	12.00	3.00	2.50	2.00	4.00	3.00	3.20	2.80	3.00
21.....	2.00	.80	1.60	5.20	16.27	2.50	2.00	6.90	3.00	3.20	2.80	3.00
22.....	1.80	.80	1.60	4.50	11.00	2.50	2.00	5.80	3.00	3.20	2.80	3.00
23.....	1.60	.60	1.60	4.50	5.00	2.50	2.00	4.00	3.00	2.90	2.80	3.00
24.....	1.60	.60	1.80	4.50	4.60	2.50	2.00	3.50	3.80	2.90	2.60	6.00
25.....	1.60	.80	2.00	3.70	4.50	2.50	2.00	3.50	3.50	2.90	2.60	4.00
26.....	1.60	1.00	7.00	3.70	3.60	3.20	2.00	3.50	3.00	2.90	2.60	3.00
27.....	1.60	1.50	6.00	3.70	3.40	8.70	2.00	3.50	3.00	2.60	2.60	3.00
28.....	1.60	1.50	4.80	3.00	3.40	8.90	2.00	3.50	3.00	2.60	2.60	3.00
29.....	1.60		3.50	3.00	3.40	3.80	2.00	3.50	3.00	2.60	2.60	
30.....	1.60		3.00	3.00	3.40	2.60	2.00	3.50	2.80	2.60	2.60	
31.....	1.60		3.00		3.00		2.00	3.50		2.60		

RATING TABLE FOR WATAUGA RIVER AT BUTLER, TENN., FOR 1900 AND 1901.

Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).	Gage Height (Feet).	Discharge (Second-feet).
0.6	120	2.3	665	4.0	2,010	5.7	3,370
.7	135	2.4	735	4.1	2,090	5.8	3,450
.8	157	2.5	810	4.2	2,170	5.9	3,530
.9	180	2.6	890	4.3	2,250	6.0	3,610
1.0	205	2.7	970	4.4	2,330	6.1	3,690
1.1	230	2.8	1,050	4.5	2,410	6.2	3,770
1.2	255	2.9	1,130	4.6	2,490	6.3	3,850
1.3	283	3.0	1,210	4.7	2,570	6.4	3,930
1.4	311	3.1	1,290	4.8	2,650	6.5	4,010
1.5	341	3.2	1,370	4.9	2,730	6.6	4,090
1.6	373	3.3	1,450	5.0	2,810	6.7	4,170
1.7	405	3.4	1,530	5.1	2,890	6.8	4,250
1.8	440	3.5	1,610	5.2	2,970	6.9	4,330
1.9	476	3.6	1,690	5.3	3,050	7.0	4,410
2.0	515	3.7	1,770	5.4	3,130		
2.1	562	3.8	1,850	5.5	3,210		
2.2	610	3.9	1,930	5.6	3,290		

ESTIMATED MONTHLY DISCHARGE OF WATAUGA RIVER AT BUTLER, TENN.

[Drainage area, 261 square miles.]

Month.	Discharge in Second-feet.			Run-off.		
	Maximum.	Minimum.	Mean.	Total in Acre-feet.	Second-feet per Square Mile.	Depth in Inches.
1900.						
August*	---	---	228	7,688	0.874	0.25
September	2,410	157	432	25,705	1.655	1.85
October	10,810	135	1,030	63,332	3.946	4.55
November	3,290	311	808	48,079	3.097	3.46
December	2,810	341	601	36,953	2.302	2.65
1901.						
January	4,410	341	794	48,820	3.042	3.52
February	1,610	120	512	28,435	1.962	2.04
March	4,410	341	900	56,339	3.448	3.97
April	8,410	810	1,970	117,223	7.548	8.42
May	11,850	890	1,971	121,192	7.551	8.71
June	7,610	810	1,821	108,357	6.977	7.78
July	3,930	515	762	46,853	2.920	3.37
August	5,210	515	2,182	134,166	8.360	9.63
September	2,410	970	1,226	75,332	4.697	5.24
October	2,090	890	1,176	72,309	4.505	5.20
November	1,610	890	969	57,659	3.712	4.14
December†	---	---	1,762	97,801	6.751	8.93
The year	11,850	120	1,337	963,496	5.123	70.95

\*17 days. †28 days.

## DOE RIVER AT ELIZABETHTON, TENN.

This station was established at the wagon bridge in Elizabethton, on June 15, 1907.

The vertical gage is attached to an elm tree about 1,500 feet above the bridge, on the right bank of the river. It was necessary to place the gage above the bridge to get it away from backwater, caused by a low dam below the bridge.

Discharge measurements are made from the covered wooden bridge.

The stream is confined between the bridge abutments unless it be at very high floods. The current is sluggish, owing to the low dam below. The bed is mostly sand.

The bench mark is a large nail driven in the side toward the river of the elm tree to which the gage is attached; elevation, 8.00 feet. There is also another nail 5.00 feet above datum.

## DISCHARGE MEASUREMENTS OF DOE RIVER AT ELIZABETHTON, TENN.

Date.	Hydrographer.	Width (Feet).	Area of Section (Square Feet).	Mean Velocity (Feet per Second).	Gage Height (Feet).	Discharge (Second- feet).
1904.						
May 22	B. S. Drane.....	128	253	1.21	1.55	307
July 11	J. M. Giles.....	129	166	.60	.79	99
Oct. 20	B. S. Drane.....	134	131	.37	.64	48
1907.						
June 17	Warren E. Hall.....	129	285	1.41	1.50	403
Aug. 9	do.....	127	283	1.78	1.60	504
Sept. 5	B. M. Hall, Jr.....	125	243	1.47	1.48	357
Sept. 5	do.....	125	242	1.38	1.43	334

NOTE.—Gage heights for 1904 measurements not same datum as the 1907 gage.

DAILY LOWE HEIGHT IN FEET OF ICE RIVER AT BRIDGEMONT, TENN., FOR 1907.

Day	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		1 .00	1 .00	1 .55	1 .00	0 .65	0 .55
2		1 .15	.90	.90	1 .00	.70	.75
3		1 .00	.90	.90	.90	.75	.75
4		.90	.90	1 .75	.90	.75	.90
5		.90	.90	1 .65	.90	.70	.90
6		.90	.90	1 .10	.90	.90	1 .00
7		.90	.90	1 .00	.90	.52	1 .20
8		.90	1 .20	2 .00	.90	.60	1 .25
9		.90	1 .45	1 .40	.55	.75	.95
10		.90	1 .00	1 .05	.90	1 .35	2 .00
11		.90	1 .00	1 .00	.90	1 .25	1 .75
12		1 .90	1 .00	1 .00	.90	.95	.85
13		1 .90	.90	.95	.90	.82	.95
14		1 .30	.90	.90	.90	.75	1 .45
15	2 .00	1 .10	.70	.90	.75	.65	.90
16	1 .70	1 .90	.75	.90	.70	.60	.95
17	1 .55	1 .75	1 .05	.80	.70	.65	1 .15
18	1 .45	1 .15	.90	.75	.90	.60	1 .30
19	1 .40	1 .10	.90	.70	.90	.60	1 .00
20	1 .30	.95	.70	.70	.90	.70	.85
21	1 .20	.90	.75	1 .00	.90	.65	1 .00
22	1 .05	.90	2 .30	1 .30	.90	.50	1 .35
23	1 .05	.90	2 .35	3 .60	.90	.50	1 .45
24	1 .10	.90	1 .95	1 .90	.90	1 .30	1 .70
25	1 .00	.90	1 .15	1 .50	.90	1 .40	1 .85
26	1 .35	.90	1 .00	1 .15	.80	1 .25	1 .45
27	1 .10	.90	1 .00	1 .10	.80	1 .15	1 .20
28	1 .00	.90	1 .00	1 .00	.85	.90	1 .55
29	1 .90	1 .65	1 .00	1 .00	.75	.75	1 .75
30	1 .05	1 .20	.95	.90	.70	.65	1 .15
31		.95	.90		.65		1 .00

## RIVER PROFILE SURVEYS IN THE TENNESSEE RIVER DRAINAGE BASIN.

### SURVEY OF HIWASSEE RIVER.

Hiwassee River was surveyed from Hiwassee, Ga., to Apalachia, N. C., a distance of 63 miles. In that distance there is a fall of 707 feet. A line of secondary levels based on the United States Geological Survey bench mark at Hiwassee, Ga., was run. The field sheets were platted on the scale of 1:22,500. During the course of the survey 39 bench marks were established and 119 water-surface elevations obtained.

There are no shoals of any consequence until just below Bell Creek, where there is one of 10 feet with good rock bottom and rock bluffs on the northeast side of the river. A dam could be constructed here with a length of about 200 feet.

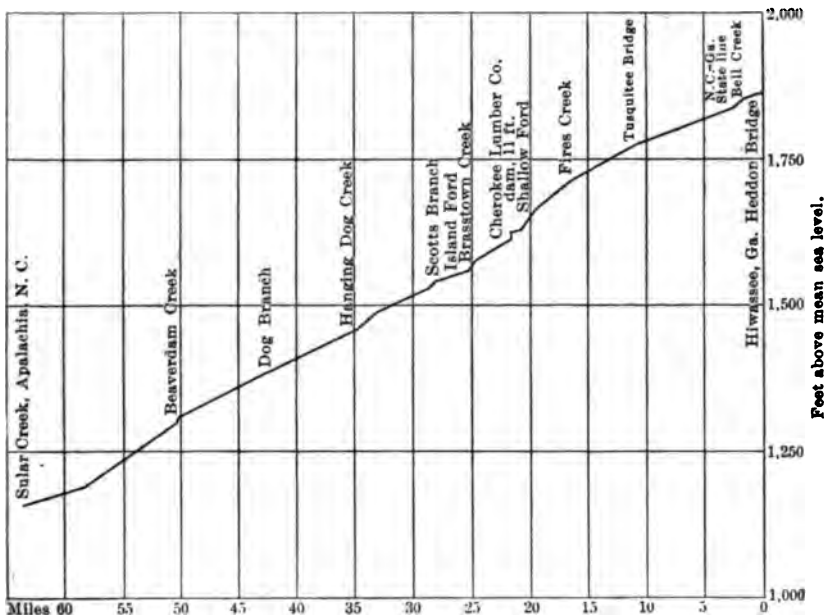


FIG. 2.—Profile of Hiwassee River from Hiwassee, Ga., to Apalachia, N. C.

One mile below Hayesville Bridge is a shoal with a fall of 18 feet in  $1\frac{1}{4}$  miles, but no suitable place for a dam was noted.

One and one-half miles below, at Passmore Ford, is a shoal with a 21-foot fall in  $1\frac{1}{4}$  miles and with a fairly good site for the construction of a dam. The bottom is rocky and there are rock bluffs on the south side of the river. The dam would be about 300 feet long.

Four and one-half miles below is the 12-foot dam of the Cherokee Lumber Company. This is a splendid site. A 40-foot structure would not back the water over  $1\frac{1}{2}$  miles and would not do any damage to cultivated lands.

Three miles below, at Island Ford, is a shoal with a 17-foot fall in 1 mile. This is an excellent dam site, as the bottom is rocky and there are hard-rock bluffs on either side. The dam would be 300 feet long. Building material can be easily obtained. Five miles below, and about 1 mile above Murphy, is a shoal with a 25-foot fall in  $1\frac{3}{4}$  miles long with a fall of 25 feet. This is an excellent power site. The bottom is rocky; both sides are of hard rock. The dam would be about 500 feet long.

Seven and one-half miles below Murphy, at Shallow Ford, is a shoal with 14-foot fall in  $1\frac{1}{4}$  miles. This offers an excellent site for a dam, as bottom and banks are rocky. The dam would be about 550 feet long. Three miles below Shallow Ford is a shoal with a 20-foot fall in  $1\frac{1}{2}$  miles. The dam here would be only about 400 feet long.

Two miles below is a 23-foot shoal  $1\frac{3}{4}$  miles long, where the river runs between steep hills. The dam here would be 600 feet long. Excellent building material is at hand.

From Chambers Creek to lower Shallow Ford,  $6\frac{1}{2}$  miles, the river has a fall of 15 feet per mile, and is almost a continuous shoal. There are several excellent dam sites. From Shoal Creek to Cane Creek, 2 miles, there is a shoal with a fall of 38 feet. This is a fine power site, with hard, rocky bottom and sides. A dam at this point would be about 700 feet long.

From Cane Creek down to the Tennessee State line (5 miles), the end of the survey, the river has a fall of 30 feet, with only a 7-foot shoal three-fourths of a mile between Kilpatrick Ferry and Taylor Ferry.

The elevations in the following list are based upon an aluminum tablet marked "1984 Atlanta" at the northeast corner of front vestibule of Towns County courthouse, Hiwassee, Ga., the elevation of which is accepted as 1,983.634 feet above mean sea level. The leveling is adjusted with flying levels on Nottely River to accord with the 1903 adjusted elevation of primary bench marks at Blairsville and Hiwassee, Ga. From the mouth of Nottely River to Apalachia the leveling is a single spur line.

The leveling was done in 1903, under the direction of Carroll Caldwell, field assistant, by T. B. O'Hagan, levelman.

ELEVATIONS ON HIWASSEE RIVER FROM HIWASSEE, GA., TO APALACHIA, N. C.

Distance in Miles.		Elevation in Feet.
0.0	Hiwassee, Towns County, courthouse, at northeast corner of front vestibule, aluminum tablet marked "Atlanta, 1984" .....	1,983.634
.3	Hiddon Bridge, 300 feet north of, edge of county road, white-oak tree, nail in west side of .....	1,882.30
.3	Hiddon Bridge, surface of water .....	1,865
.3	High water .....	1,882
.3	Bridge floor .....	1,881
.8	Town Branch, mouth of, surface of water .....	1,862
1.6	25 feet north of bridge, 20 feet west of river, point on bluff rock .....	1,871.36
	Bridge, surface of water .....	1,857
	B. F. ....	1,874.8
	High water .....	1,876
1.7	Hog Creek, mouth of, surface of water .....	1,855
1.9	Small rapids, surface of water .....	1,854

## ELEVATIONS ON HIWASSEE RIVER FROM HIWASSEE, GA., TO APALACHIA, N. C.—Continued.

Distance in Miles.		Elevation in Feet.
2.2	Bell Creek, 900 feet north of, on east edge of river, triple maple tree, nail in side of.....	1,854.14
2.2	Bell Creek, mouth of, surface of water.....	1,853
2.3	Small falls, head of, surface of water.....	1,851
2.3	Small falls, foot of, surface of water.....	1,847
2.8	Surface of water.....	1,838
3.4	Sally Ford, mouth of, surface of water.....	1,836
3.6	Hog Creek, mouth of, surface of water.....	1,833
3.7	Surface of water.....	1,830
3.8	Gibson Creek, mouth of, surface of water.....	1,829
4.8	Long Bullet Creek, mouth of, surface of water.....	1,825
4.8	Pendelton Ford, 25 feet northwest of, nail in side of dead stump.....	1,838.20
4.8	Surface of water.....	1,823
4.8	High water.....	1,835
5.2	Sneaking Creek, mouth of, surface of water.....	1,820
5.5	Surface of water.....	1,819
5.6	—— Ford, 75 feet northwest of, 10 feet west of road, nail in red-oak tree.....	1,830.62
6.1	15 feet north of river, point on rock.....	1,824.63
6.2	Surface of water.....	1,811
6.4	Stream, mouth of, surface of water.....	1,809
6.4	Rough Ford, 15 feet north of river, rock bluff, point on rock.....	1,816.84
6.9	Surface of water.....	1,807
7.2	Shooting Creek, mouth of, surface of water.....	1,804
7.9	Barnard Bridge, northeast abutment, point on top of.....	1,818.31
	Surface of water.....	1,797
	Bridge floor.....	1,819.7
	High water.....	1,814
8.3	—— Ford, surface of water.....	1,794
8.3	—— Ford, 50 feet south of ford, 15 feet north of river, nail in side of dogwood tree.....	1,807.89
8.8	Surface of water.....	1,790
9	Head of island.....	1,789
9.2	Hyatts Mill Creek, mouth of, surface of water.....	1,787
9.4	Herbert Ford, on south edge of river at, nail in side of birch tree.....	1,791.09
	High water.....	1,799
	Surface of water.....	1,787
	Blair Creek, mouth of, surface of water.....	1,787
10	12 feet west of river, point on rock.....	1,796.74
10	Surface of water.....	1,782
10.8	Town Creek, mouth of, surface of water.....	1,778
11.5	Tusquitee Bridge, 250 feet west of, on edge of river, nail in root of birch tree.....	1,778.90
	Bridge, surface of water.....	1,774
	High water.....	1,794
11.8	Martin or Quail Creek, mouth of, surface of water.....	1,174
12.2	Surface of water.....	1,773
12.6	Tusquitee Creek, mouth of, 150 feet northwest of, 10 feet west of river, nail in root of birch tree.....	1,777.93
12.6	Surface of water.....	1,771
12.8	Rapids, surface of water.....	1,767
13.3	Below rapids, surface of water.....	1,760
13.6	Stream, mouth of, surface of water.....	1,759
14	Martin Ford, 125 feet south of, on west edge of river, a fish trap, nail in root of birch tree.....	1,757.74
	Surface of water.....	1,756
14.8	Surface of water.....	1,742
14.9	Leatherwood Ford, 25 feet northwest of, nail in walnut tree.....	1,749.19
	Surface of water.....	1,741
16	Allbon Creek, mouth of, surface of water.....	1,741
16.4	Surface of water.....	1,722
17	Fires Creek, mouth of, surface of water.....	1,712
17.3	Mountain stream, mouth of, surface of water.....	1,708
17.5	Passmore Ford, east side of river, in center of ford road, nail in root of gum tree.....	1,709.84



## ELEVATIONS ON HIWASSEE RIVER FROM HIWASSEE, GA., TO APALACHIA, N. C.—Continued.

Distance in Miles.		Elevation in Feet.
17.5	Surface of water.....	1,707
17.7	Cloud Fire Creek, mouth of, surface of water.....	1,700
18.3	Surface of water.....	1,690
18.8	Betty Creek, mouth of, surface of water.....	1,685
19.1	Head of island, surface of water.....	1,679
19.4	Sweetwater Creek, mouth of, surface of water.....	1,673
19.6	Stream, mouth of, surface of water.....	1,668
20	Shallow Ford, 15 feet east of river, nail in side of birch tree.....	1,667.14
20	Surface of water.....	1,663
20.5	Surface of water.....	1,659
20.9	End of island, surface of water.....	1,649
21	Creek, mouth of, surface of water.....	1,642
21.4	Surface of water.....	1,632
21.5	Surface of water.....	1,629
21.8	Backwater of Cherokee dam, 1,500 feet from, at small rapids, surface of water.....	1,624
22	Top of Cherokee dam, surface of water.....	1,625
22	Foot of dam, surface of water.....	1,614
22	Cherokee dam, 25 feet southwest of, point of rock.....	1,616.59
22	Surface of water.....	1,609
22.2	Canewater Ford, surface of water.....	1,606
24.	Rocky Branch, mouth of, surface of water.....	1,591.4
24	North edge of river, nail in side of birch tree.....	1,594.79
24.1	Small rapids, foot of, surface of water.....	1,590
24.7	Stream, mouth of, surface of water.....	1,586
25.2	Brasstown Creek, mouth of, surface of water.....	1,576
26.2	Island Ford, 700 feet east of, south side of river, point on rock.....	1,566.56
27.6	Peachtree Creek, mouth of, surface of water.....	1,550
28	Horseshoe Ford, surface of water.....	1,549
28	South side of ford, nail in side of beech tree.....	1,553.06
29.5	20 feet north of river, north side of road, point on rock.....	1,548.70
29.9	Scott Branch, mouth of, surface of water.....	1,539
30.4	Stream, mouth of, surface of water.....	1,539
31.3	Martin Creek, mouth of, surface of water.....	1,520
31.6	Twin beech tree, nail in root of.....	1,518.12
31.8	Stream, mouth of, surface of water.....	1,513
32.1	Murphy, N. C., iron bridge, south abutment, point on rock.....	1,518.30
32.1	Surface of water.....	1,512
32.1	Bridge floor.....	1,531.9
32.1	High water.....	1,529
32.5	Valley River, mouth of, west shore, 20 feet north of, in water, point on rock.....	1,506.85
32.5	Surface of water.....	1,506
33.6	Surface of water.....	1,499
34	Surface of water.....	1,491
34.9	Laurel Creek, mouth of, surface of water.....	1,474
35.3	Johnson Ford, 8 feet south of river, nail in root of birch tree.....	1,471.95
35.3	Surface of water.....	1,469
35.3	High water.....	1,481
35.9	Hanging Dog Creek, mouth of, surface of water.....	1,462
36.5	Surface of water.....	1,459
37	Nottely River, mouth of, surface of water.....	1,455
37	On land projecting between the two rivers, birch tree, nail in root of.....	1,459.40
37	Nottely River, mouth of, south side of, willow tree, nail in root of.....	1,456.93
38	Small rapids, surface of water.....	1,448
39	Beach Creek, mouth of, surface of water.....	1,438
40.5	Surface of water.....	1,425
40.5	Shallow Ford, 40 feet southwest of ford, honey-bee tree, nail in root of.....	1,431.59
41.2	Surface of water.....	1,418
42	Grape Creek, mouth of, surface of water.....	1,416
42.5	Small shoals, head of, surface of water.....	1,415
42.5	Small shoals, surface of water, foot of.....	1,410
42.9	Surface of water.....	1,406
44.1	Persimmon Creek, mouth of, surface of water.....	1,391
44.8	Foot of large shoals, point on rock.....	1,390.24

## ELEVATIONS ON HIWASSEE RIVER FROM HIWASSEE, GA., TO APALACHIA, N. C.—Continued.

Distance in Miles.		Elevation in Feet.
44.8	Surface of water.....	1,331
45	Head of small shoals, surface of water.....	1,379
46.2	Dennest Creek, mouth of, surface of water.....	1,365
46.9	Point on rock.....	1,363.58
48	Shoals, surface of water.....	1,346
48.8	Robertson Ferry, 100 feet below, point on rock.....	1,344.23
48.8	Surface of water.....	1,343
49.9	Shoals, surface of water.....	1,340
50.4	Creek, mouth of, surface of water.....	1,332
50.6	Surface of water.....	1,329
51.2	Chambers Creek, mouth of, surface of water.....	1,324
51.2	20 feet north of bank, point on rock.....	1,327.94
51.8	Opposite island, surface of water.....	1,318
52.5	Beaverdam Creek, mouth of, surface of water.....	1,304
53	Opposite island, surface of water.....	1,296
53.9	Lared Creek, mouth of, surface of water.....	1,290
54.3	Shoals, surface of water.....	1,285
54.3	Foot of shoals, surface of water.....	1,277
54.8	Surface of water.....	1,269
55.2	Rapids, surface of water.....	1,259
56.9	Anderson Creek, mouth of, surface of water.....	1,248
57.9	Surface of water (15 feet above low water).....	1,240
58.5	Shallow Ford, 40 feet south of, nail in root of gum.....	1,239.67
58.5	Surface of water.....	1,234
58.5	High water.....	1,241
58.6	Foot of small shoals, surface of water.....	1,237
58.9	Shoals Creek, mouth of, surface of water.....	1,237
59.7	Foot of small rapids, surface of water.....	1,218
60.8	Stream, south of, surface of water.....	1,198
61.1	Cane Creek, mouth of, surface of water.....	1,195
63	Surface of water.....	1,178
64.2	Camp Creek, mouth of, surface of water.....	1,175
65	Kilpatrick Ferry, 12 feet south of, willow tree.....	1,175.14
65	Surface of water.....	1,172
65.2	Taylor Ferry, 60 feet northwest of, edge of bank, point on large rock.....	1,169.58
65.2	Surface of water.....	1,166
66.8	Apalachia, N. C., Sular Creek, mouth of, 100 feet from post-office, 5 feet north of bank of river, triple willow tree.....	1,161.58
66.8	Surface of water.....	1,158
66.8	High water.....	1,168

## SURVEY OF NOTTELY RIVER.

Nottely River was surveyed from its mouth,  $3\frac{1}{2}$  miles below Murphy, N. C., to Blairsville Bridge, near Blairsville, Ga., a distance of 38 miles. In that distance there is a fall of 314 feet. A line of secondary levels was run, based on a primary bench mark of the United States Geological Survey at Hiwassee, Ga., and the field sheets were platted on a scale of 1:22,500. During the course of the survey 30 bench marks were established and 88 water-surface elevations obtained.

One mile above the mouth of the river is a 24-foot shoal 1 mile long, where there is an excellent solid rock dam site. At this place a dam would be 200 feet long. Three and one-fourth miles farther up, at Hall Ford, there is a shoal with a fall of 33 feet in  $1\frac{3}{4}$  miles, with good bottom and good sides. A dam would be about 350 feet long.

For 9 miles above this point the bottoms widen and are cultivated on either side for most of the distance. The fall in this section is a little over 3 feet per mile.

One mile below Laundermilk Ford there is a shoal with a fall of 10 feet in three-fourths of a mile where a dam, with a length of 200 feet, could be built.

At Thompson Bridge, at the foot of a 46-foot shoal, 3 miles long, is an excellent dam site. From Weazel Creek to Morgan Ford,  $5\frac{1}{2}$  miles, the river has a fall of 40 feet, and there are two or three suitable sites for small dams. At Katkins Bridge there is a 4-foot dam using all the available power to operate a gristmill.

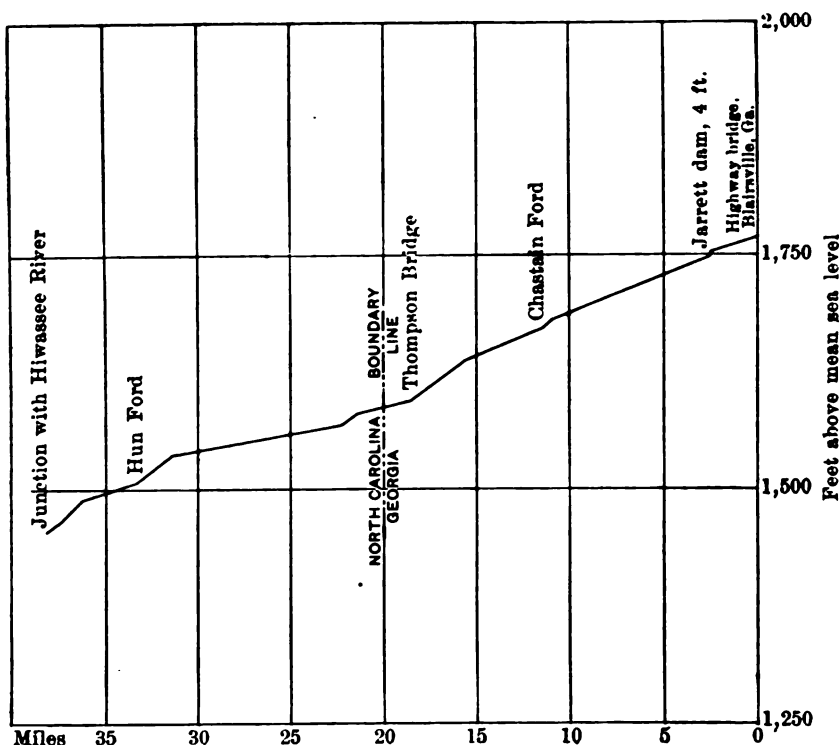


FIG. 3.—Profile of Nottely River from Near Murphy, N. C., to Bridge Near Blairsville, Ga.

From here to Blairsville Bridge, the end of the survey, the river is very much smaller, with a few small shoals, which, however, do not seem worth developing.

The elevations in the following list are based upon a bronze tablet marked "1892 Atlanta" in the foundation wall at northwest corner of Union County courthouse, Blairsville, Ga., the elevation of which is accepted as 1,891.536 feet above mean sea level. The leveling is adjusted with the Hiwassee River flying levels to accord with the 1903 adjusted elevation of primary bench marks at Blairsville and Hiwassee. The leveling was done, under the direction of Carroll Caldwell, field assistant, by T. B. O'Hagan, levelman.

## ELEVATIONS ON NOTTELY RIVER FROM ITS MOUTH TO BLAIRSVILLE, GA.

Distance in Miles.		Elevation in Feet.
0.0	Junction of Nottely and Hiwassee rivers, on point of peninsula, nail in side of birch tree.....	1,459.40
.0	Surface of water.....	1,454.52
.3	At lower ford, surface of water.....	1,459
.3	Seventy-five feet north of lower ford, nail in root of hickory tree.....	1,466.77
1	High-water mark.....	1,471
1	Upper ford, 50 feet south of, nail in root of oak tree.....	1,474.59
1	Surface of water.....	1,467
1.3	Surface of water.....	1,477
1.5	Surface of water.....	1,472
1.5	Surface of water.....	1,478
1.8	Deep Ford, 25 feet north of, nail in root of black oak.....	1,487.56
1.8	Surface of water.....	1,483
2	Surface of water.....	1,489
2.3	High water.....	1,499
2.4	Head of shoals, surface of water.....	1,491
2.6	Surface of water, rain during night raised 1.3 feet (lower water surface, 1,492.67 feet).....	1,493
2.9	Hall Bridge, 20 feet west of, nail in side of apple tree.....	1,500.20
2.9	Surface of water.....	1,493
2.9	High water.....	1,503
4.2	Davis Ford, 20 feet northwest of, nail in side of maple tree.....	1,504.43
4.2	Surface of water.....	1,499
4.9	Surface of water, on rock.....	1,502
5.2	Mouth of Coombs Creek, surface of water.....	1,505
5.4	Surface of water.....	1,505
5.5	Hall Ford, north edge of river, nail in side of water birch tree.....	1,513.02
5.5	Surface of water.....	1,505
5.5	High water.....	1,521
5.9	Mouth of branch, surface of water.....	1,512
6	Surface of water.....	1,520
6.6	Surface of water.....	1,526
6.9	Opposite island, surface of water.....	1,534
7	Mouth of Rocky Branch, surface of water.....	1,535
7.1	Near old mill, surface of water.....	1,538
7.5	Surface of water.....	1,542
8.6	Nottely Bridge, 1,800 feet north of, in old field near barn, nail in side of persimmon tree.....	1,559.54
8.6	Mouth of branch, surface of water.....	1,544
8.9	Nottely Bridge, 100 feet west of, 5 feet south of road, nail in side of black-oak tree.....	1,560.13
8.9	Surface of water.....	1,544
9.6	Surface of water.....	1,547
10.5	Mouth of Johnson Branch, surface of water.....	1,548
10.9	Surface of water.....	1,551
11.5	Jack Creek, 900 feet south of, in bend of river, 600 feet west and 600 feet north of, in cornfield, nail in root of dead peach tree.....	1,571.83
11.5	Surface of water.....	1,554
11.7	Surface of water.....	1,555
12	Anderson Bridge, 50 feet west of, nail in side of sycamore tree.....	1,565.78
12	Surface of water.....	1,556
12	High water.....	1,575
12.2	Surface of water.....	1,560
12.9	Mouth of branch, surface of water.....	1,561
13.3	Ford (has no name), 20 feet northeast of, nail in side of birch stump.....	1,574.02
13.3	Surface of water.....	1,562
13.3	High water.....	1,577
14.2	Surface of water.....	1,565
15.1	Surface of water.....	1,568
15.4	Laudermilk Ford, 1.4 miles below, opposite old fish dam, 50 feet west of river, near small branch, nail in root of black-oak tree.....	1,586.77
15.6	Surface of water.....	1,573
16	Surface of water.....	1,580
16.8	Laudermilk Ford, 100 feet southwest of, 20 feet north of road, nail in root of apple tree.....	1,598.19

## ELEVATIONS ON NOTTLEY RIVER FROM ITS MOUTH TO BLAIRSVILLE, GA.—Continued.

Distance in Miles.		Elevation in Feet.
16.8	Surface of water.....	1,583
16.8	High water.....	1,599
17.2	Mouth of Butler Creek, surface of water.....	1,585
17.7	Below fish dam, surface of water.....	1,587
17.8	Mouth of Moccasin Creek, surface of water.....	1,588
17.8	Moccasin Creek, 200 feet south of, 35 feet east of river, east side of road, nail in root of red-oak tree.....	1,602.87
18.5	Mouth of branch, surface of water.....	1,591
18.6	Mouth of Dooley Creek, surface of water.....	1,591
18.9	Thompson Bridge, 250 feet south of, 100 feet southeast of road, nail in root of red-oak tree.....	1,611.01
18.9	Surface of water.....	1,592
18.9	High water.....	1,601.53
19.1	Surface of water.....	1,599
19.6	In shoals, surface of water.....	1,611
20.2	Above fish dam, surface of water.....	1,617
20.4	Head of fish dam, surface of water.....	1,619
20.8	Foot of island, in shoals, surface of water.....	1,624
21	Surface of water.....	1,630
21.4	Chapman Ford, 150 feet north of, 2 feet east of road, nail in root of walnut tree.....	1,645.81
21.4	Surface of water.....	1,634
21.4	High water.....	1,644
21.8	Just below fish dam, surface of water.....	1,638
21.9	Mouth of Camp Creek, surface of water.....	1,639
22.6	Above shoals, surface of water.....	1,652
23	Mouth of Weasel Creek, surface of water.....	1,655
23.6	Mouth of branch, surface of water.....	1,656
23.8	In shoals, surface of water.....	1,657
23.8	Chamber Ford, 0.4 mile northeast of, northwest side of river, point on edge of rock.....	1,675.88
24.2	Chamber Ford, 200 feet west of, nail in root of walnut tree.....	1,671.49
24.2	Surface of water.....	1,661
24.2	High water.....	1,678
25	Above small shoals, surface of water.....	1,669
25.2	Chastain Ford, 50 feet west of, nail in side of walnut tree.....	1,683.45
25.2	Surface of water.....	1,669
25.5	Foot of large shoals, surface of water.....	1,675
25.8	Mouth of Ivylog Creek, head of shoals, surface of water.....	1,680
26.3	Near house, surface of water.....	1,685
26.6	Majners Ford, 75 feet west of, on edge of bank, nail in side of corn-bean tree.....	1,690.8
26.6	Surface of water.....	1,687
26.8	Meadow Ford, 15 feet north of, nail in root of beech tree.....	1,699.17
26.8	Surface of water.....	1,689
26.8	High water.....	1,703
27.3	Huggins Ford, 25 feet north of, corn-bean tree, nail in side of.....	1,707.82
27.3	Surface of water.....	1,692
27.5	Shoals, surface of water.....	1,694
27.8	Surface of water.....	1,698
27.9	Above shoals, surface of water.....	1,698
28.4	Morgan Ford, 40 feet north of, red-oak tree.....	1,714
28.4	Surface of water.....	1,702
29	Mouth of Young Cane Creek, surface of water.....	1,699
29	Mouth of Castile Creek, surface of water.....	1,709
29.1	Castile Creek, 1,600 feet above, on rock, edge of river, point on rock.....	1,714.20
29.4	Above rapids, surface of water.....	1,715
30	Above fish dam, surface of water.....	1,718
30.3	McBee Ford, 60 feet north of, nail in side of red oak.....	1,734.37
30.3	Surface of water.....	1,721
30.8	Above branch, surface of water.....	1,723
31.1	Mouth of Reece Creek, surface of water.....	1,724
31.4	Youngs Ford, 80 feet southwest of, red-oak tree.....	1,741.02
31.4	Surface of water.....	1,727
31.5	Millburn Creek, just below, surface of water.....	1,730

## ELEVATIONS ON NOTTLEY RIVER FROM ITS MOUTH TO BLAIRSVILLE, GA.—Continued.

Distance in Miles.		Elevation in Feet.
31.9	At canal, surface of water at foot of .....	1,732
31.9	Head of canal, surface of water .....	1,735
31.9	Canal cut, 50 feet northeast of river, 15 feet southwest of ford, nail in root of red-oak tree (cut has a drop of 3.6 feet) .....	1,741.26
32.2	Above small rapids, surface of water .....	1,739
33	Mouth of creek, surface of water .....	1,743
33.6	Watkins Bridge, 375 feet above, north edge of river, point on rock .....	1,747.54
33.6	Surface of water .....	1,747
33.6	Jarrett milldam, foot of, surface of water .....	1,748
33.6	Jarrett milldam, head of, surface of water (Jarrett milldam has a drop of 3.79 feet) .....	1,752
34.5	Reeds Ford, 150 feet east of, nail in root of walnut tree .....	1,766.24
34.5	Surface of water .....	1,755
35	Above small rapids, surface of water .....	1,760
35.9	Blairsville Bridge, 100 feet southeast of, mouth of Butternut Creek, 15 feet north of, nail in side of red-oak tree .....	1,775.94
35.9	Surface of water .....	1,769
35.9	High water .....	1,783
37.2	Blairsville courthouse, Union County, Ga., in wall on west side of build- ing, bronze tablet .....	1,891.536

## SURVEY OF THE FRENCH BROAD RIVER.

The profile survey which was made by the United States Geological Survey on French Broad River, extends from Paint Rock to Asheville, a distance of 43 miles. The total fall in the distance is 714 feet.

This survey was made in 1902 by C. M. Pritchett, under the direction of Prof. J. A. Holmes.

The elevations given in the following tables are taken from a profile made by C. M. Pritchett.

## ELEVATIONS ON FRENCH BROAD RIVER.

Distance in Miles.		Elevation in Feet.
0.0	Paint Rock, mouth of creek, water surface .....	1,250
1.2	Murray Creek, mouth of, water surface .....	1,270
2.3	Water surface .....	1,288
4.8	Spring Creek, mouth of, water surface .....	1,306
6	Southern Railway bridge, water surface .....	1,326
7.3	Mountain Island, head of, water surface .....	1,360
8.5	Laurel Creek, mouth of, water surface .....	1,388
10	Water surface .....	1,416
10.5	Water surface .....	1,439
12.7	Brush Creek, mouth of, water surface .....	1,498
13.4	Barnard station, water surface .....	1,509
14.9	Water surface .....	1,540
16	Walnut Creek, mouth of, water surface .....	1,552
18.3	Bear Creek, mouth of, water surface .....	1,583
19.7	Water surface .....	1,603
20.2	Water surface .....	1,623
20.8	County highway bridge, water surface .....	1,626
21	Marshall station, water surface .....	1,636
23	Southern Railway bridge, water surface .....	1,660
23.5	Ivy River, mouth of, water surface .....	1,666
26	Water surface .....	1,704
27.3	Sandy Mush Creek, mouth of, water surface .....	1,713
30.7	Flat Creek, mouth of, water surface .....	1,756
31.8	Alexander, N. C., county bridge, water surface .....	1,774

ELEVATIONS ON FRENCH BROAD RIVER—*Continued.*

Distance in Miles.		Elevation in Feet.
32.3	Water surface .....	1,783
33.2	Water surface .....	1,832
34.8	Lick Creek, mouth of, water surface .....	1,862
37.4	Beaver Creek, mouth of, water surface .....	1,921
38.2	County bridge, water surface .....	1,930
40.4	Reed Creek, mouth of, water surface .....	1,950
42	Southern Railway bridge, water surface .....	1,900
43	Asheville .....	

## SURVEY OF NOLICHUCKY, TOE, NORTH TOE, AND CANEY RIVERS.

The Nolichucky River is an important tributary of Holston River. It is formed by the junction of Toe and Caney rivers; Toe River is again divided in North Toe and South Toe rivers. The profile survey was made by the Hydrographic Branch of the United States Geological Survey, and extends from the mouth of North Indian Creek in Tennessee, near the State line, to the mouth of Plumtree Creek, which is a tributary of North Toe River, and from the mouth of Caney River to Borlans Creek.

The work was done in 1902, by C. M. Pritchett, under the direction of Prof. J. A. Holmes.

The following water-surface elevations are taken from the profile sheets:

## ELEVATIONS ON NOLICHUCKY, TOE AND NORTH TOE RIVERS.

Distance in Miles.		Elevation in Feet.
0.0	North Indian Creek, mouth of, water surface .....	1,614
.7	Martins Creek, mouth of, water surface .....	1,621
2.4	South Indian Creek, mouth of, water surface .....	1,646
2.9	Ferry, water surface .....	1,654
3.1	Old dam, foot of, water surface .....	1,656
3.4	Water surface .....	1,666
3.7	South and Western Railroad bridge, water surface .....	1,680
6.9	State line, North Carolina-Tennessee, water surface .....	1,766
7.4	Water surface .....	1,772
8	Water surface .....	1,820
10	Water surface .....	1,893
11.3	South and Western Railroad bridge, water surface .....	1,965
13	Mouth of branch, water surface .....	1,978
13.4	Water surface .....	1,995
15.6	Head of Nolichucky River, which is junction of Toe and Caney rivers, water surface .....	2,023
15.6	Caney River, mouth of, water surface .....	2,023
16.2	Hunt Dale Ferry, water surface, on Toe River .....	2,028
18.6	Pigeon Roost Creek, mouth of, water surface .....	2,060
20.7	Raccoon Creek, mouth of, water surface .....	2,088
21.4	Rock Creek, mouth of, water surface .....	2,105
22.1	Jacks Creek, mouth of, water surface .....	2,115
22.6	Pig Pen Creek, mouth of, water surface .....	2,121
23.4	Green Mountain Station, at ferry, water surface .....	2,124
25.7	Water surface .....	2,138
26.2	Mouth of branch, water surface .....	2,147
26.9	Water surface .....	2,154
27.8	Water surface .....	2,172
28.9	Water surface .....	2,212
29.5	Cane Creek, mouth of, water surface .....	2,224

## ELEVATIONS ON NOLICHUCKY, TOE AND NORTH TOE RIVERS—Continued.

Distance in Miles.		Elevation in Feet.
32.4	Roses Branch, mouth of, at ford, water surface .....	2,254
32.8	Sink Hole Creek, mouth of, water surface .....	2,262
33.6	Chandler Branch, mouth of, water surface .....	2,276
36.7	South Toe River, mouth of, water surface .....	2,330
38	Boons Ford, on North Toe River, water surface .....	2,365
38.9	Water surface .....	2,385
39.9	Crabtree Creek, mouth of, water surface .....	2,390
40.6	Snow Creek, mouth of, water surface .....	2,405
42.5	Water surface .....	2,434
43.2	Big Bear Creek, mouth of, water surface .....	2,452
43.7	Water surface .....	2,464
44.5	Water surface .....	2,469
45.1	Water surface .....	2,480
46.3	Spruce Pine, N. C., at Ford .....	2,492
46.8	Beaver Creek, mouth of, water surface .....	2,496
47.7	Grassy Creek, mouth of, water surface .....	2,508
48.5	Catheys Creek, mouth of, water surface .....	2,520
49.1	Dam site, water surface .....	2,530
50.8	Roses Creek, mouth of, water surface .....	2,544
52.4	Big Jacks Creek, mouth of, water surface .....	2,559
53.6	Mouth of branch, water surface .....	2,565
54.5	Water surface .....	2,582
56.2	Brushy Creek, mouth of, water surface .....	2,616
56.8	Clear Branch, mouth of, water surface .....	2,619
57.2	Water surface .....	2,626
60.2	Gouches Creek, mouth of, water surface .....	2,666
61.3	Ravens Criff, water surface .....	2,682
62.8	Wiseman Mill, water surface .....	2,714
64.5	Three Mile Creek, mouth of, water surface .....	2,742
66.8	Pyatts Branch, mouth of, water surface .....	2,783
67	Water surface .....	2,793
68.4	Heusons Creek, mouth of, water surface .....	2,824
69.8	Plumtree Creek, mouth of, water surface. End of survey .....	2,855

## ELEVATIONS ON CANEY RIVER.

Distance in Miles.		Elevation in Feet.
0.0	Mouth of Caney River, water surface .....	2,023
.5	Water surface .....	2,035
1.8	Public road crossing, water surface .....	2,051
2.8	Public road crossing, water surface .....	2,065
3.4	Big Creek, mouth of, water surface .....	2,084
4.7	Public road crossing, water surface .....	2,116
6.6	Public road crossing, water surface .....	2,165
7	Bent Creek, mouth of, water surface .....	2,178
9.1	Little Bald Creek, mouth of, water surface .....	2,250
9.8	Big Bald Creek, mouth of, water surface .....	2,264
10.8	Holloway Branch, mouth of, water surface .....	2,310
12.5	McCrackins store, water surface .....	2,356
13.9	Public road crossing, water surface .....	2,390
15.5	Wampler post-office, water surface .....	2,427
18.5	Prices Creek, mouth of, water surface .....	2,470
22.3	Public road crossing, water surface .....	2,536
23.9	Public road crossing, water surface .....	2,586



## SURVEY OF WATAUGA RIVER.

This river profile survey was made in 1902, by the Hydrographic Branch of the United States Geological Survey. The work was done by A. Henderson and F. L. Foust, under the direction of Prof. J. A. Holmes.

The following water-surface elevations are taken from the large profile:

## ELEVATIONS ON WATAUGA RIVER FROM CRABORCHARD CREEK TO STATE LINE.

Distance in Miles.		Elevation in Feet.
0.0	Craborchard Creek, mouth of, water surface.....	2,646
2.9	Water surface.....	2,622
3.1	Cove Creek, mouth of, water surface.....	2,608
5.2	Water surface.....	2,583
6.1	Water surface.....	2,576
7	Laurel Creek, mouth of, water surface.....	2,580
7.2	Water surface.....	2,544
7.5	Water surface.....	2,543
9.2	Beaverdam Creek, mouth of, water surface.....	2,503
10.4	Timber Ridge Branch, mouth of, water surface.....	2,471
11	Beech Creek, mouth of, water surface.....	2,424
12.3	Stone Mountain Branch, mouth of, water surface.....	2,280
13.6	State line, North Carolina-Tennessee, water surface.....	2,124
14	Water surface.....	2,080
14.5	Water surface.....	2,025

**PUBLICATIONS**  
**OF THE**  
**NORTH CAROLINA GEOLOGICAL AND ECONOMIC SURVEY.**

**BULLETINS.**

1. Iron Ores of North Carolina, by Henry B. C. Nitze, 1893. 8°, 239 pp., 20 pl., and map. *Postage 10 cents.*
2. Building and Ornamental Stones in North Carolina, by T. L. Watson and F. B. Laney in collaboration with George P. Merrill, 1906. 8°, 283 pp., 32 pl., 2 figs. *Postage 25 cents. Cloth-bound copy 30 cents extra.*
3. Gold Deposits in North Carolina, by Henry B. C. Nitze and George B. Hanna, 1896. 8°, 196 pp., 14 pl., and map. *Out of print.*
4. Road Material and Road Construction in North Carolina, by J. A. Holmes, and William Cain, 1893. 8°, 88 pp. *Out of print.*
5. The Forests, Forest Lands and Forest Products of Eastern North Carolina, by W. W. Ashe, 1894. 8°, 128 pp., 5 pl. *Postage 5 cents.*
6. The Timber Trees of North Carolina, by Gifford Pinchot and W. W. Ashe, 1897. 8°, 227 pp., 22 pl. *Postage 10 cents.*
7. Forest Fires: Their Destructive Work, Causes and Prevention, by W. W. Ashe, 1895. 8°, 66 pp., 1 pl. *Postage 5 cents.*
8. Water-powers in North Carolina, by George F. Swain, Joseph A. Holmes and E. W. Myers, 1899. 8°, 362 pp., 16 pl. *Postage 16 cents.*
9. Monazite and Monazite Deposits in North Carolina, by Henry B. C. Nitze, 1895. 8°, 47 pp., 5 pl. *Postage 4 cents.*
10. Gold Mining in North Carolina and other Appalachian States, by Henry B. C. Nitze and A. J. Wilkins, 1897. 8°, 164 pp., 10 pl. *Postage 10 cents.*
11. Corundum and the Basic Magnesian Rocks of Western North Carolina, by J. Volney Lewis, 1895. 8°, 107 pp., 6 pl. *Postage 4 cents.*
12. History of the Gems Found in North Carolina, by George Frederick Kunz, 1907. 8°, 60 pp., 15 pl. *Postage 8 cents. Cloth-bound copy 30 cents extra.*
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17. Terracing of Farm Lands, by W. W. Ashe, 1908. 8°, 38 pp., 6 pl., 2 figs. *Postage 4 cents.*
18. Bibliography of North Carolina Geology, Mineralogy and Geography, with a list of Maps, by Francis Baker Laney and Katherine Hill Wood, 1909. 8°, 428 pp. *Postage 25 cents.*
19. The Tin Deposits of the Carolinas, by Joseph Hyde Pratt and Douglass B. Sterrett, 1905. 8°, 64 pp., 8 figs. *Postage 4 cents.*
20. Water-powers of North Carolina: An Appendix to Bulletin 8, 1910. 8°, 383 pp. *Postage 25 cents.*
21. The Gold Hill Mining District of North Carolina, by Francis Baker Laney, 1910. 8°, 137 pp., 23 pl., 5 figs. *Postage 15 cents.*
22. A Report on the Cid Mining District, by J. E. Pogue, Jr., 1911. 8°, 144 pp., 22 pl., 5 figs. *Postage 15 cents.*

## ECONOMIC PAPERS.

1. The Maple-sugar Industry in Western North Carolina, by W. W. Ashe, 1897. 8°, 34 pp. *Postage 2 cents.*

2. Recent Road Legislation in North Carolina, by J. A. Holmes. *Out of print.*

3. Talc and Pyrophyllite Deposits in North Carolina, by Joseph Hyde Pratt, 1900. 8°, 29 pp., 2 maps. *Postage 2 cents.*

4. The Mining Industry in North Carolina During 1900, by Joseph Hyde Pratt, 1901. 8°, 36 pp., and map. *Postage 2 cents.*

Takes up in some detail Occurrences of Gold, Silver, Lead and Zinc, Copper, Iron, Manganese, Corundum, Granite, Mica, Talc, Pyrophyllite, Graphite, Kaolin, Gem Minerals, Monazite, Tungsten, Building Stones, and Coal in North Carolina.

5. Road Laws of North Carolina, by J. A. Holmes. *Out of print.*

6. The Mining Industry in North Carolina During 1901, by Joseph Hyde Pratt, 1902. 8°, 102 pp. *Postage 4 cents.*

Gives a List of Minerals found in North Carolina; describes the Treatment of Sulphuret Gold Ores, giving Localities; takes up the Occurrence of Copper in the Virginina, Gold Hill, and Ore Knob districts; gives Occurrence and Uses of Corundum; a List of Garnets, describing Localities; the Occurrence, Associated Minerals, Uses and Localities of Mica; the Occurrence of North Carolina Feldspar, with Analyses; an extended description of North Carolina Gems and Gem Minerals; Occurrences of Monazite, Barytes, Ocher; describes and gives Occurrences of Graphite and Coal; describes and gives Occurrences of Building Stones, including Limestone; describes and gives Uses for the various forms of Clay; and under the head of "Other Economic Minerals" describes and gives Occurrences of Chromite, Asbestos, and Zircon.

7. Mining Industry in North Carolina During 1902, by Joseph Hyde Pratt, 1903. 8°, 27 pp. *Postage 2 cents.*

8. The Mining Industry in North Carolina During 1903, by Joseph Hyde Pratt, 1904. 8°, 74 pp. *Postage 4 cents.*

Gives descriptions of Mines worked for Gold in 1903; descriptions of Properties worked for Copper during 1903, together with assay of ore from Twin-Edwards Mine; Analyses of Limonite ore from Wilson Mine; the Occurrence of Tin; in some detail the Occurrences of Abrasives; Occurrences of Monazite and Zircon; Occurrences and Varieties of Graphite, giving Methods of Cleaning; Occurrences of Marble and other forms of Limestone; Analyses of Kaolin from Barber Creek, Jackson County, North Carolina.

9. The Mining Industry in North Carolina During 1904, by Joseph Hyde Pratt, 1905. 8°, 95 pp. *Postage 4 cents.*

Gives Mines Producing Gold and Silver during 1903 and 1904 and Sources of the Gold Produced during 1904; describes the mineral Chromite, giving Analyses of Selected Samples of Chromite from Mines in Yancey County; describes Commercial Varieties of Mica, giving the manner in which it occurs in North Carolina, Percentage of Mica in the Dikes, Methods of Mining, Associated Minerals, Localities, Uses; describes the mineral Barytes, giving Method of Cleaning and Preparing Barytes for Market; describes the use of Monazite as used in connection with the Preparation of the Bunsen Burner, and goes into the use of Zircon in connection with the Nernst Lamp, giving a List of the Principal Yttrium Minerals; describes the minerals containing Corundum Gems, Hiddenite and Other Gem Minerals, and gives New Occurrences of these Gems; describes the mineral Graphite and gives new Uses for same.

10. Oyster Culture in North Carolina, by Robert E. Coker, 1905. 8°, 39 pp. *Postage 2 cents.*

11. The Mining Industry in North Carolina During 1905, by Joseph Hyde Pratt, 1906. 8°, 95 pp. *Postage 4 cents.*

Describes the mineral Cobalt and the principal minerals that contain Cobalt; Corundum Localities; Monazite and Zircon in considerable detail, giving Analyses of Thorianite; describes Tantalum Minerals and gives description of the Tantalum Lamp; gives brief description of Peat Deposits; the manufacture of Sand-lime Brick; Operations of Concentrating Plant in Black Sand Investigations; gives Laws Relating to Mines, Coal Mines, Mining, Mineral Interest in Land, Phosphate Rock, Marl Beds.

12. Investigations Relative to the Shad Fisheries of North Carolina, by John N. Cobb, 1906. 8°, 74 pp., 8 maps. *Postage 6 cents.*

13. Report of Committee on Fisheries in North Carolina. Compiled by Joseph Hyde Pratt, 1906. 8°, 78 pp. *Postage 4 cents.*

14. The Mining Industry in North Carolina During 1906, by Joseph Hyde Pratt, 1907. 8°, 144 pp., 20 pl., and 5 figs. *Postage 10 cents.*

Under the head of "Recent Changes in Gold Mining in North Carolina," gives methods of mining, describing Log Washers, Square Sets, Cyanide Plants, etc., and detailed descriptions of Gold Deposits and Mines are given; Copper Deposits of Swain County are described; Mica Deposits of Western North Carolina are described, giving Distribution and General Character, General Geology, Occurrence, Associated Minerals, Mining and Treatment of Mica, Origin, together with a description of many of the mines; Monazite is taken up in considerable detail as to Location and Occurrence, Geology, including Classes of Rocks, Age, Associations, Weathering, method of Mining and Cleaning, description of Monazite in Original Matrix.

15. The Mining Industry in North Carolina During 1907, by Joseph Hyde Pratt, 1908. 8°, 176 pp., 13 pl., and 4 figs. *Postage 15 cents.*

Takes up in detail the Copper of the Gold Hill Copper District; a description of the Uses of Monazite and its Associated Minerals; descriptions of Ruby, Emerald, Beryl, Hiddenite, and Amethyst Localities; a detailed description with Analyses of the Principal Mineral Springs of North Carolina; a description of the Peat Formations in North Carolina, together with a detailed account of the Uses of Peat and the Results of an Experiment Conducted by the United States Geological Survey on Peat from Elizabeth City, North Carolina.

16. Report of Convention called by Governor R. B. Glenn to Investigate the Fishing Industries in North Carolina, compiled by Joseph Hyde Pratt, State Geologist, 1908. 8°, 45 pp. *Postage 4 cents.*

17. Proceedings of Drainage Convention held at New Bern, North Carolina, September 9, 1908. Compiled by Joseph Hyde Pratt, 1908. 8°, 94 pp. *Postage 5 cents.*

18. Proceedings of Second Annual Drainage Convention held at New Bern, North Carolina, November 11 and 12, 1909, compiled by Joseph Hyde Pratt, and containing North Carolina Drainage Law, 1909. 8°, 50 pp. *Postage 3 cents.*

19. Forest Fires in North Carolina During 1909, by J. S. Holmes, Forester, 1910. 8°, 52 pp., pl. *Postage 5 cents.*

20. Wood-using Industries of North Carolina, by Roger E. Simmons, under the direction of J. S. Holmes and H. S. Sackett, 1910. 8°, 74 pp., 6 pl. *Postage 7 cents.*

#### VOLUMES.

- Vol. I. Corundum and the Basic Magnesian Rocks in Western North Carolina, by Joseph Hyde Pratt and J. Volney Lewis, 1905. 8°, 464 pp., 44 pl., 35 figs. *Postage 32 cents. Cloth-bound copy 30 cents extra.*

- Vol. II. Fishes of North Carolina, by H. M. Smith, 1907. 8°, 453 pp., 21 pl., 188 figs. *Postage 30 cents.*

- Vol. III. The Physiography and Geography of the Coastal Plain Region of North Carolina. *In Press.*

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Samples of any mineral found in the State may be sent to the office of the Geological and Economic Survey for identification, and the same will be classified free of charge. It must be understood, however, that NO ASSAYS, OR QUANTITATIVE DETERMINATIONS, WILL BE MADE. Samples should be in a lump form if possible, and marked plainly on outside of package with name of sender, post-office address, etc.; a letter should accompany sample and stamp should be enclosed for reply.

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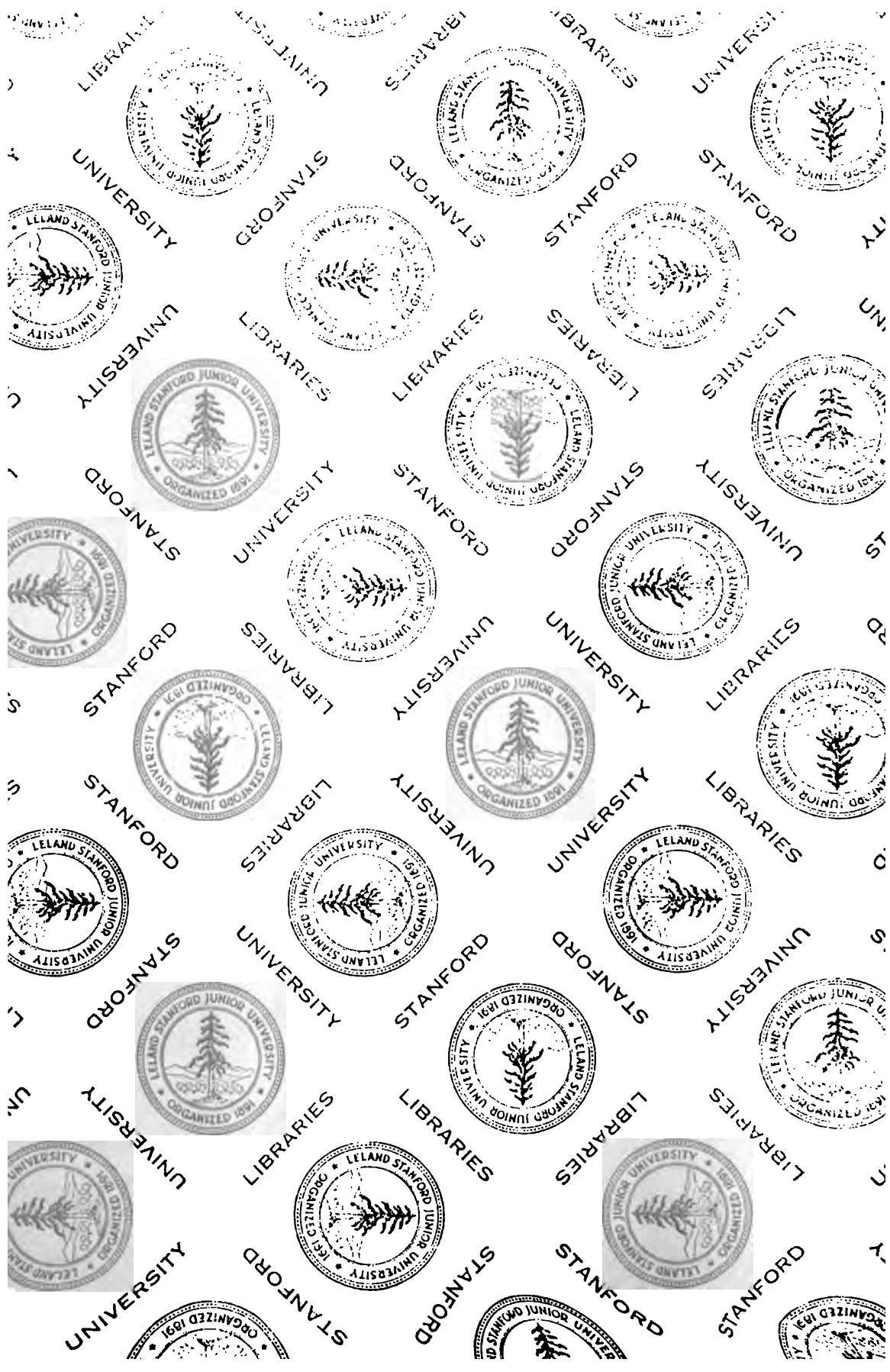




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